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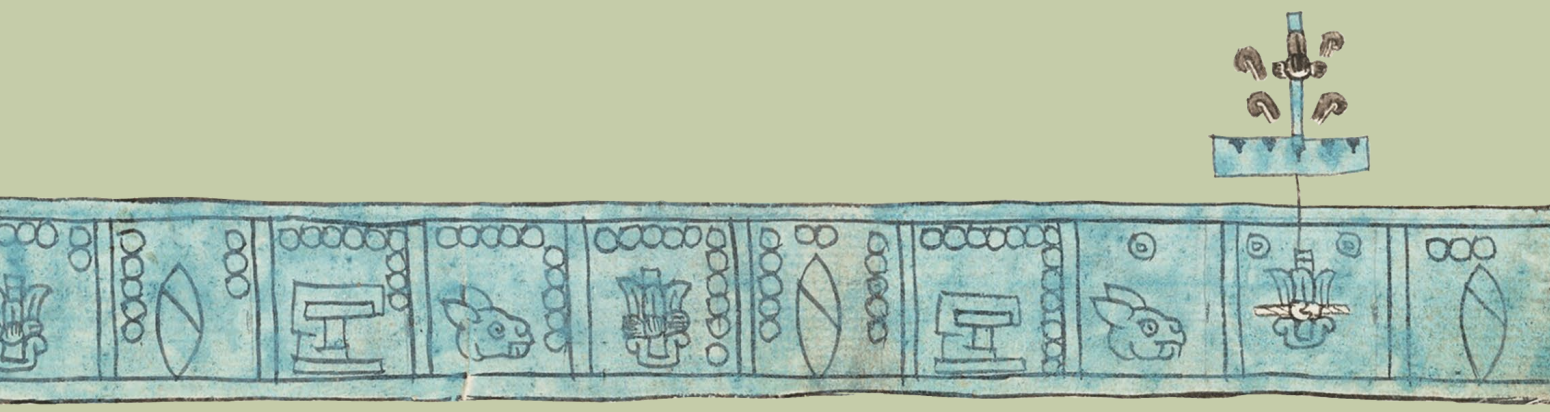
WESTERN MESOAMERICAN CALENDARS AND WRITING SYSTEMS

Edited by

Mikkel Bøg Clemmensen and Christophe Helmke



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WESTERN MESOAMERICAN CALENDARS AND WRITING SYSTEMS

PROCEEDINGS OF THE COPENHAGEN ROUNDTABLE

Edited by

Mikkel Bøg Clemmensen
Christophe Helmke

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Dedicated to the memory of Ana Díaz

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A Few Words on the Copenhagen Roundtable and its Proceedings

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This volume brings together recent studies of the writing systems of Mesoamerica. Whereas some of the studies are purposefully focused on individual features or specific signs in a given writing system, others provide a more general overview and supply a synthesis of the current state of knowledge on a particular writing system. In this it bears remarking that Mesoamerica is one of the few places in the world where writing was developed, along with the other 'hearths of literacy' such as Egypt (3400 BC-AD 394), Mesopotamia (3200 BC-AD 75), the Indus Valley (2800-1600 BC) and the Yellow River Valley of China (1400-1200 BC). At such hearths, after the initial development of writing, we see the florescence of a series of related and derived scripts and this is what can be observed for Mesoamerica as well.

In addition to the hieroglyphic writing of the Maya, which is celebrated for its graphic intricacy and for its phonetic decipherment, from the 1950s onward (Coe 1992; Knorosov 1958; Stuart 1992), nearly a dozen other writing systems have now been documented for Mesoamerica. Other writing systems, which to date have resisted a coherent phonetic decipherment include (from east to west): 1) Cotzumalhupan, 2) Olmec, 3) Isthmian, 4) Zapotec, 5) Mixtec, 6) Ñuiñe, 7) Teotihuacan, 8) Epiclassic, 9) Toltec (Tula & Chichen Itza), and 10) Gulf (El Tajín) (see Berlo 1989; Caso 1928, 1962, 1966; Chinchilla Mazariegos 2011; Curtis 2020; Domenici 2017; Helmke and Davletshin 2019; Helmke and Nielsen 2011, 2021; Houston 2004; Houston and Coe 2003; Jansen and Broekhoven 2008; Justeson 1986, 2012; Justeson and Kaufman 2018; Kaufman and Justeson 2001, 2004, 2008; Lacadena 2010a, 2010b; Lacadena García-Gallo 2008; Langley 1986; Macri and Stark 1993; Marcus 1976, 2006; Moser 1977; Rivera Guzmán 2008; Rodríguez Martínez *et al.* 2006; Smith 1973; Taube 2000, 2011; Troike 1978; Urcid 2001, 2012; Velásquez García 2008, 2010; Whittaker 1992).

One writing system that has attracted renewed attention in recent years is that of the Aztec, which for a long time was treated as a type of incipient proto-script making almost abusive use of the rebus principle (see Morley 1915: 29-30). Furthermore, its phonetic status has often been called into question and raised as a matter of contention (Nicholson 1973; Wright Carr 2009). Despite these incongruences, the foundations of the scholarly work on Aztec writing and its original phonetic decipherment can actually be traced back to nineteenth century, to the works of the French Americanist and Philologist Joseph Marius Alexis Aubin (1849) and of the Mexican medical doctor and intellectual Antonio Peñafiel (1885). Taken together, these works convey a lucid understanding of the foundational elements of Aztec writing, involving logograms, phonograms and semantic determinatives to record Nawatl, the language of the Aztec (Lacadena García-Gallo and Wichmann 2011; Whittaker 2021; Zender 2008). As such, these scholars should be credited with the decipherment of Aztec writing, their intellectual breakthroughs finding their rightful place among the ranks of early deciphers such as Jean-Francois Champollion, whose decipherment took place just three decades earlier. More recent studies have come as a rejoinders to these pioneers, once more confirming that this writing system is wholly phonetic and shares many key structural features and points of commonality with other logophonetic writing systems, most notably that of the Maya (Davletshin 2021; Lacadena 2008; Lacadena García-Gallo 2018a, 2018b; Lacadena García-Gallo and Wichmann 2011; Thouvenot 1987; Valencia Rivera 2021; Velásquez García 2019; Whittaker 2009, 2021).

The papers drawn together here were first presented at a conference held on 9 and 10 December 2020. The conference was organised within the framework of a research project under the joint direction of Jesper Nielsen and Christophe Helmke, entitled *The Origins and Developments of Central Mexican Calendars and Writing Systems*. Since 2019, this multi-year project has been generously funded by the Velux Foundations (Grant 115078), and is focused on the development of the writing systems of Central Mexico, and on demonstrating the internal structure, functioning and relations of the scripts to each other, and on presenting a synthesis of the current understanding of Central Mexican writing systems. In addition to fieldwork focusing on western Mesoamerican writing systems (particularly Teotihuacan, Epiclassic and Aztec writing), the project also involves two doctoral scholarships, granted respectively to Mikkel Bøg Clemmensen and Rosa-Maria Worm Danbo, who initially organised and convened the conference.

The thirteen named days of the trecena headed by the date '1 Water' (detail of Book 4, folio 82v, from the Florentine Codex, dated 1577). Reproduced from photograph in the World Digital Library Collection (LCCN permalink: https://lccn.loc.gov/2021667837)

The conference was to be held at the University of Copenhagen in Denmark, but given the outbreak of Covid-19 and the global pandemic, we were forced to hold it virtually over Zoom. Although often beleaguered with criticisms, this format proved itself to be highly effective and allowed us to share our results in a concerted and intensive manner, drawing in scholars from Mexico, Guatemala, Europe and Russia. The timing of the conference was necessarily liminal, given that we needed to account for eight time zones, spread over some 10,713km. The working papers had been completed ahead of the conference and were shared among the presenters so as to better tailor their own presentations and also to prepare comments for the discussions. Each presenter was given ample time to present their papers, and at the close of each session, we held an extensive discussion period, envisaged around an actual circular table. Although elusive, this roundtable as it were provided the format and structure of interactions allowing us to share ideas, reactions and precisions with our co-presenters. These discussions and the comments of our colleagues allowed each of the presenters to subsequently revise their papers before final submission to the present volume.

Given the focus on Western Mesoamerican writing systems and the calendrical systems of these scripts, during the planning of the roundtable, we thought that it would be appropriate to correlate the date of the event to the Aztec calendrical system as used in Central Mexico at the time of the conquest. Based on accepted correlations between the Aztec and Julian Calendars then in use (see Broda de Casas 1969; Caso 1967), we were able to suggest that the conference began on the day named *Ome Itzk*^{w}*intli* or '2 Dog' (9 December) and ended on *Eyi Osomatli* or '3 Monkey' (10 December) in the 260-day ritual calendar, being the second and third day in the fortnight named *Se Atl* '1 Water'. This fortnight (albeit of thirteen days), was thought to be presided over by a supernatural turkey, the large and much bejewelled, and perhaps somewhat crazed *Chālchīwtotolin*. The solar year in which the conference took place (i.e. 2020) would correspond to *Chikonawi Kalli* '9 House'. Such dates were rife with signification and were often the source of divinations in Precolumbian times. Thus after announcing these calendrical correlations to our colleagues, and looking up the associated auguries of these dates, we were amused to find out that the date '2 Dog' "is a good day for being trustworthy, a bad day for trusting others of questionable intent" (Voorburg 2020). An interesting start to a conference. The following day, '3 Monkey' was likewise apt, in that it is "A good day for light-heartedness, a bad day for seriousness" (Voorburg 2020), likewise appropriate given that this was the close of our roundtable. Furthermore the day 'Dog' was rather suitable given that this day is associated to the northern cardinal direction (think Scandinavia), whereas 'Monkey' is associated to the west (think Mesoamerica). Auguries that were made all the more evocative, given that it was watched over by *Piltzintek*^{w}*tli* the 'young lord' as *Yowaltek*^{w}*tli*, or 'Lord of the Night', but here in his guise as a deity linked to the rising sun and with healing... Somewhat ironic since we held the conference during some of the year's darkest days. These anecdotal observations aside, we can now turn to the volume itself, commenting on its structure and providing summaries of each of the chapters.

The guiding structure of this volume, and that of the foregoing conference, is predominantly chronological, presenting contributions pertaining to the earliest writing systems first, and ending with the latest. The volume thereby starts with the Classic (*c.* AD 250-650) writing system of Teotihuacan, before going on to the Ñuiñe writing system, which is can now be dated to between the fourth and tenth centuries. This is followed by a chapter on the Epiclassic (AD 650-1000) writing system of Central Mexico, leading to the Postclassic (*c.* AD 1000-1519) writing system of the Aztec, which endured into the seventeenth century, surviving the Spanish conquest by several decades. As such, the latter chapters bridge the Precolumbian and Colonial divide and draw on sources from both major periods.

The first chapter by Davide Domenici provides an overview of the writing system of the Classic metropolis Teotihuacan. He notes that it is no longer in doubt whether Teotihuacan had a writing system, but rather how that writing system functioned. In this, Domenici sets out to discuss the specific working principles of the system. After initial considerations of which language the writing system might record, Domenici moves on to discuss different aspects of the system, such as the calendrics, place names, titles and personal names, names of buildings, verbs, and finally the interplay of text and image. Towards the end of the chapter, Domenici considers the uses to which writing was put at Teotihuacan, reflecting upon the texts found in murals

and their relation to the architectural settings and the performances that took place in these architectural spaces.

In Chapter 2, Iván Rivera Guzmán reviews the Ñuiñe writing system of Western Oaxaca. Guzmán discusses past research on Ñuiñe writing and the scholarly efforts that have gone into defining the temporal and geographical limits of this writing system. One of the challenges in the study of Ñuiñe writing is clarifying the glyphs for the twenty days of the 260-day calendar. Guzmán reviews previous research on calendrics and discusses the day signs that still need to be determined securely. The available Ñuiñe inscriptions appear in various contexts, and Guzmán analyses examples from monuments that commemorate conquests, dynastic foundations, and deeds of important individuals. Guzmán ends his chapter by considering the possible relationship between specific languages, notably Mixtec and Eastern Otomanguean languages more generally, and the Ñuiñe writing system.

Chapter 3 follows suit in providing an overview over another Western Mesoamerican writing system, that of the Epiclassic city-states that emerged following the fall of Teotihuacan. In this chapter, Christophe Helmke and Jesper Nielsen use the insights from the known corpus of Epiclassic writing to cast light on the salient aspects of this writing system, including its geographic distribution, characterisation of the glyphic corpus, its chronology of the inscriptions, the graphic characteristics of the writing system, the current state of decipherment, and candidate languages recorded in the writing system. Helmke and Nielsen discuss what is known for each of these aspects and offer their suggestions for future lines of research. This then provides a cohesive overview of the writing system based on the most recent scholarship and providing the authors' most recent interpretations and insights.

In the fourth chapter, we jump forward in time as it takes us to the Late Postclassic and early Colonial writing system of the Aztec. In this chapter, Albert Davletshin challenges previous descriptions of Nawatl writing by adding another category of signs he calls 'notational' signs. Supplementing logograms and phonetic signs, notational signs, according to Davletshin, cover dates, tribute items, titles, verbs, and more. Davletshin devotes the main part of his chapter to a study of the linear texts of the *Codíce en Cruz*, focusing on the sign that depicts a woven throne with backrest, usually known under the Nawatl term *ikpalli*. Davletshin argues that this sign is not an element of iconography, as previously held, but rather an unrecognized notational sign for the title of *tlatoani*, 'ruler, king', and thus an example of how notational signs were used to record, in this case, titles in Nawatl writing.

In Chapter 5, Margarita Cossich Vielman studies two colonial documents, the *Lienzo de Tlaxcala* and the *Lienzo de Quauhquechollan*. The documents represent the conquest of Guatemala from the perspective of two of the nine indigenous groups that were allied with the Spanish soldiers in this effort. Cossich focuses on the similarities and differences in the route of conquest represented by the two indigenous documents, as well as on the hieroglyphic writing found in the documents. Both documents use Nahuatl hieroglyphic writing and Cossich uses them to study the differences in the scribal traditions, such as the tendency to use infixes among the Quauhquechollan scribes.

The two last chapters focus on the calendars and chronological systems of colonial Central Mexico. In Chapter 6, Mikkel Bøg Clemmensen discusses the circular calendars, known as 'calendar wheels', produced during the colonial era. While several recent studies have claimed a European origin for the circular shape of the calendar wheels, Clemmensen instead sets out to explore the possible Precolumbian antecedents for this format. Clemmensen discusses three Precolumbian examples of circular calendars and compares these to the early colonial manuscript known as the Boban Calendar Wheel. Noting several thematic and stylistic overlaps, Clemmensen concludes that the Boban Calendar Wheel draws mainly on a Precolumbian tradition, casting doubt on the idea that the indigenous scribes were copying a European format.

Whereas penultimate chapter focused on the continuity from the Precolumbian calendrical tradition, the seventh, and last, chapter by †Ana Díaz focuses on the changes that the Nahua chronological system underwent in the hands of colonial writers. In this chapter, Diaz fuels the hypothesis that the annual cycle of eighteen *veintenas* and five extra days was never an autonomous calendar before the conquest. According to Díaz, the ethnocentric use of the Julian calendar as a model resulted in the representation of the *veintenas* as 'months' and the postulation of an independent indigenous annual calendar as the main chronological system working in parallel with the 260-day *tonalpohualli*. It is Díaz' argument, based on linguistic, glyphic, and iconographic sources, that the *tonalpohualli* was the sole chronological system before the conquest, and that the veintenas were recorded through this system rather as an autonomous means of tallying time.

With the close of our roundtable, we awaited the resubmissions of the manuscripts, the participants having had the chance to update their contributions based on our discussions and peer-feedback. On 19 January, 2021, we were shocked to learn of the untimely passing of Ana Díaz. This was, forty days

after the end of our roundtable, or precisely two *veintenas* as Ana would not have failed to remark. Ana Guadalupe Díaz Álvarez was a distinguished researcher of the Instituto de Investigaciones Estéticas of the Universidad Nacional Autónoma de México. She held the position of academic coordinator and assistant to the director of the preeminent Museo Nacional de Antropología (from 2010 to 2012). In 2015, she obtained the Fulbright-García Robles Research Scholarship enabling a visiting scholarship to the Art Department of Harvard University. In 2018, she won the Mesoamerican Studies Chair awarded by the Agencia Mexicana de Cooperación International para el Desarrollo and in 2019, she was awarded the Miguel León-Portilla Special Chair of the Instituto de Investigaciones Históricas. Despite this great loss, we will cherish having spent time together discussing what she loved most as part of our roundtable and are proud to present some of her last work, among these pages.

As anyone working with Mesoamerican languages and writing systems knows, but it bears repeating here, the orthographies used for the various languages and language families can be highly confusing and are not for the faint-hearted. Indeed, even professionals working in the area are often disparaged by the great variety of orthographies in use, even for a single language. The rich orthographies of Mesoamerica have a long history, spanning the five centuries from the first encounters between the alphabet of the Old World, and the logophonetic of the New World—with Europeans grappling as to how best to render long versus short vowels, lateral affricates, contrasting voiced stops, glottalized consonants and a wide range of tonal contrasts. As a result, and owing to the great linguistic diversity of Mesoamerica, there is a wide range of orthographies in place, spanning from those devised in the wake of the Spanish conquest in the sixteenth and seventeenth centuries, to the fine-tuned and linguistically informed orthographies. In addition, there are also a range of established conventions for certain language families resulting in differing spellings for comparable phonemes even in the same studies and publications. As editors to this volume, we have thus entertained many different solutions, including a systematised orthography for all contributions, but given that some papers are focused more specifically on epigraphy, and others lean more on ethnohistoric sources where colonial orthographies are the norm, and others still range freely between epigraphic and linguistic conventions, this proved impossible. As a result, we have therefore maintained the orthographies selected by each author for each of the individual submissions, but have striven to ensure that these are all internally coherent.

Rather than publish papers in both English and Spanish, we have chosen to unify the volume by publishing all the contributions in English, with papers submitted in Spanish translated by the editors. However, to enable greater dissemination of these papers and facilitate citation by our colleagues on either side of the Atlantic, we also provide Spanish summaries of each of the contributions at the close of the volume. We hope that this proves to be a suitable and functional solution.

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Chapter 1:
The Writing System of Teotihuacan:
An Overview

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Teotihuacan has been characterised as a unique phenomenon in the history of Mesoamerica, but an excessive stress on the "anomalous" character of the Classic metropolis hinders our comprehension of relevant aspects of its culture and history. The debate on whether the Teotihuacanos, the inhabitants of the great metropolis, employed a writing system is a case in point. Despite the publication of a long series of ground-breaking studies (e.g. Arreola 1922; Beyer 1922; Caso 1937, 1959, 1961, 1966, 1967; von Winning 1961, 1979; Kubler 1967, 1972; Angulo 1972; Millon C. 1973, 1988; Barthel 1982, 1987; Berlo 1989; Cowgill 1992), as well as of immensely useful compendia of Teotihuacan imagery and sign repertories (e.g. Miller 1973; Langley 1986, 1991, 2002; von Winning 1987; de la Fuente 1995), several scholars have cast doubt on the existence of a proper and viable writing system at Teotihuacan.[1] It was only at the beginning of the present century that this trend was inverted, mostly thanks to the publication of a highly influential essay by Karl Taube (2000), soon followed by a burst of relevant publications. The recognition of non-Teotihuacano (i.e. Zapotec and Maya) inscriptions at Teotihuacan further improved our understanding of the diversity of the "written landscape" at the metropolis (Spence 1992; Rattray 1993; Taube 2003; Helmke and Nielsen 2013; Helmke 2017a), while the study of Teotihuacan inscriptions in various regions of Mesoamerica enriched our view of the geographical extent and variability of the script (Taube 2000; García-Des Lauriers 2005; Nielsen *et al.* 2019a, 2019b).

Some major obstacles still hinder the decipherment of the Teotihuacan writing system but, thanks to recent advancements, the problem we face nowadays is no longer to ascertain *if* a Teotihuacan writing system existed, but to explore its specific working principles. Following the lead of a recent attempt (Helmke and Nielsen 2021), I provide herein a synthetic overview of current knowledge on the Teotihuacan writing system, tackling issues such as categories of signs, their interplay with associated imagery and their usage as a social practice. Due both to space constraints and to the limits of available information, I describe the Teotihuacan script essentially in a synchronous manner, as if all known texts were approximately contemporaneous (Tlamimilolpa-Xolalpan-Metepec phases, *c.* AD 250-650), as well as leaving aside the important topic of the geographical extent of the script and its variability. For more detailed treatments of both these key issues, I remit the reader to the recent treatment by Christophe Helmke and Jesper Nielsen (2021: 31-32, 36-39).

The Conundrums of Language and Phonography

The main reason why Teotihuacan script has so far resisted decipherment is that we are still unaware of the identity of the dominant language that was spoken in the city. As recently summarized by Helmke and Nielsen (2021: 52-56), several candidate languages have been proposed, including early forms of Nawatl, Totonak, Mije-Sokean and Otomanguean languages. Helmke and Nielsen, observing the basic word order and the position of numeral quantifiers in relation to nouns, restricted the range of possibilities to languages of the Yuto-Nawan and Oto-Manguean stocks, with perhaps a preference for the latter (Helmke and Nielsen 2011: 45-48, 2021: 52-56). Still, some scholars strongly advocate for an early form of Nawatl (e.g. King and Gómez Chávez 2004: 218-219; Whittaker 2021: 182-184), even if the presence of Yuto-Nawan speakers in Early Classic Central Mexico is still debated from the point of view of historical linguistics. In a rejoinder to Nielsen and Helmke (2011: 345-349), both Albert Davletshin (2004, 2021, in press) and Dmitri Beliaev (2019) have pointed out that the foreign glosses in the Maya inscription of Stela 31 at Tikal — characterized by an anomalous syntax, by an unusual frequency of syllabograms and by an abundance of glottalized consonants — exhibit features that have a strong potential in terms of identifying the dominant language of Teotihuacan during the Early Classic.

Since all known Mesoamerican writing systems are of a logo-phonetic kind, it is reasonable to assume

[1] With the terms "writing" and "script" I am strictly referring to glottographic writing, not including any form of "semasiography". This is, nonetheless, not intended to deny the highly codified and systematic character of other graphic communication systems, as its interplay with writing is, at least in part, discussed herein.

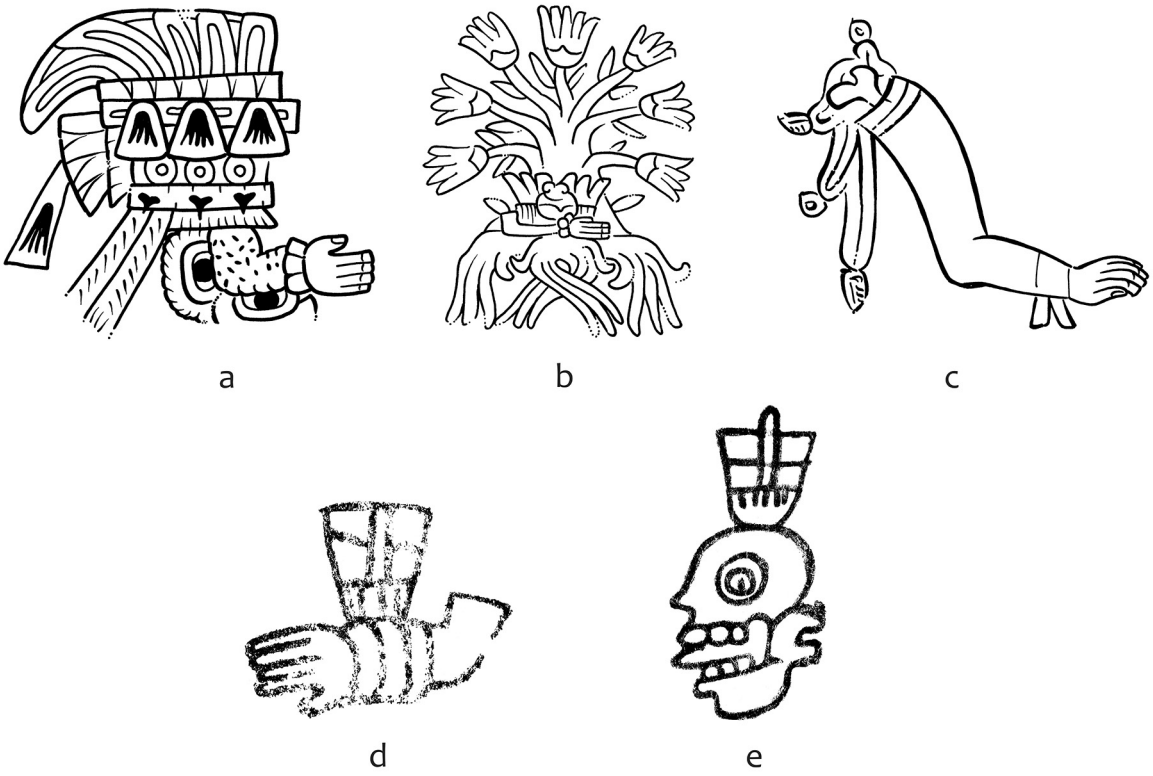

Figure 1.1: The "bent-arm" and "dart butt" glyphs (drawings by Christophe Helmke).
a) Bent arm glyph from the Techinantitla murals in the context of an anthroponym. **b)** Bent arm glyph from the Techinantitla murals, providing a toponym. **c)** The toponym <*Acolhuacan*> in the *Codex Mendoza*, fol. 21v. **d)** The bent arm glyph with a dart butt as a superfix rendered on the floor of the Plaza de los Glifos at La Ventilla (from Nielsen and Helmke 2011: Fig. 6.2). **e)** A human skull with a dart butt as superfix from the same plaza at La Ventilla (from Nielsen and Helmke 2011: Fig. 6.3).

that the Teotihuacan script is likewise a mixed logo-phonetic one as well, as is also suggested by a recent, conservative count of its signs, which tallies at around 116 (Helmke and Nielsen 2021: 48-49). Thus, a solution to identifying the language recorded in the texts of Teotihuacan would be the secure identification of phonograms. A much-discussed case is that of the "bent arm" sign that appears in various glyphic collocations at Techinantitla and La Ventilla (Figure 1.1a, b, d), and which is almost identical to the one that in Nawatl writing records the ethnonym <*Acolhua*> and related toponyms (King and Gómez 2004; Whittaker 2021: 178-181) (Figure 1.1c). However, since the phonographic or logographic value of the Nawatl sign is still debated—depending on how we understand the literal meaning of <*Acolhua*>, translated either as "Those who have shoulders" or "Those of the curved water" (Whittaker 2021: 180)—it would be incorrect, and premature, to assume a secure phonographic value for its Teotihuacano antecedent.[2] Another interesting case is that of a sign that represents the tail-end, or fletching, of an arrow, which is interpreted as a polyvalent sign that could stand both for 'reed', *aka(tl)*, and 'arrow', *mi(tl)* (and thus may have been employed as both an **a-** and **mi-** phonetic complement for **AKOL** and **MIKIZ**, respectively) (Berlo 1989: 22; Whittaker 2021: 185-190) (Figure 1.1d-e). Although interesting, none of these and other similar proposals, constitute the much-awaited "phonographic smoking gun". Anyway, phonograms seem to have been quite rare in Teotihuacan script, as is also the case in other Western Mesoamerican writing systems, which make preferential use of logograms.

Even if the still unresolved conundrums of language and phonography hamper a proper decipherment, they do not hinder productive attempts of "semantic decipherment", that is, the identification of the meaning of specific logograms (even if disassociated from their phonetic value) based on comparisons with known glyphs from other Mesoamerican writing systems. It is on this premise that we can embark on an exploration of what is currently known about the Teotihuacan writing system, with reasonable certainty.

[2] Some phonetic readings of compounds including the "bent arm" sign are based on the debatable interpretations of associated glyphs, such as the bivalve shell which Gordon Whittaker interprets as a heart (Whittaker 2021: 185-190).

Figure 1.2: Day signs in the 260-day ritual calendar of Teotihuacan.
(drawings by Christophe Helmke).

Calendrics

Despite the peculiar scribal habit of Teotihuacanos, which meant that they rarely inscribed calendrical records on non-perishable supports, there exists secure evidence of the use of the 260-day divinatory count, whose day names were also employed to name the "vague" year, which approximates the solar year of 360+ days. Numerical coefficients, written employing the bar-and-dot system, are always placed below the day sign, as also is also the case for the glyphic corpora of Epiclassic sites such as Xochicalco and Cacaxtla and in the Otomanguean-speaking regions of South-western Mesoamerica.

The several studies devoted to Teotihuacan calendars (Caso 1937, 1959, 1961, 1966, 1967; von Winning 1979; Taube 2011:78-84; Helmke 2017b; Helmke and Nielsen 2011, 2021: 44-45; Helmke *et al.* 2013) led to the recognition of at least eight day name glyphs (Figure 1.2). Day names are usually inserted in circular cartouches (vs. the squared ones with rounded corners employed in the Epiclassic and the square one used in the Postclassic; Helmke and Nielsen 2021: 37-38), often framed by feathers and/or by a four-petalled flower; nonetheless, none of these cartouches seem to be exclusive of calendrical glyphs. Of special relevance has been the recognition of the Reptile Eye (RE) glyph as the Classic and Epiclassic version of the day 'Reed' (Helmke and Nielsen 2011: 9-20). Numerical coefficients associated with the 'Reed' (RE), 'House' (depicted either as a frontal building or as a single *almena*), and 'Flint' (an arrow point) signs constitute strong evidence that Teotihuacanos, as well as several later groups in Central Mexico, employed the so-called Set III of year-bearers, that is, 'House' (3), 'Rabbit' (8), 'Reed' (13) and 'Flint' (18) (Helmke and Nielsen 2011: 12-20; Helmke *et al.* 2013). The year-bearers are often represented as crowned by the so-called Year Sign Headdress, marking them as animated entities conceptually overlapping with paramount rulers (Nielsen and Helmke 2019). The depiction of a burning torch upon the sign 7 RE on the Piedra Labrada stela, the common association between the RE glyphs and fire signs in several contexts (Figure 1.3a-b), as well as the presence of Teotihuacano structures on Cerro de la Estrella, constitute clear evidence that Teotihuacanos celebrated New Fire ceremonies (Helmke and Nielsen 2011: 17-19; Helmke and Montero 2016; see also Fash *et al.* 2009; Nielsen and Helmke 2018: 95-97).

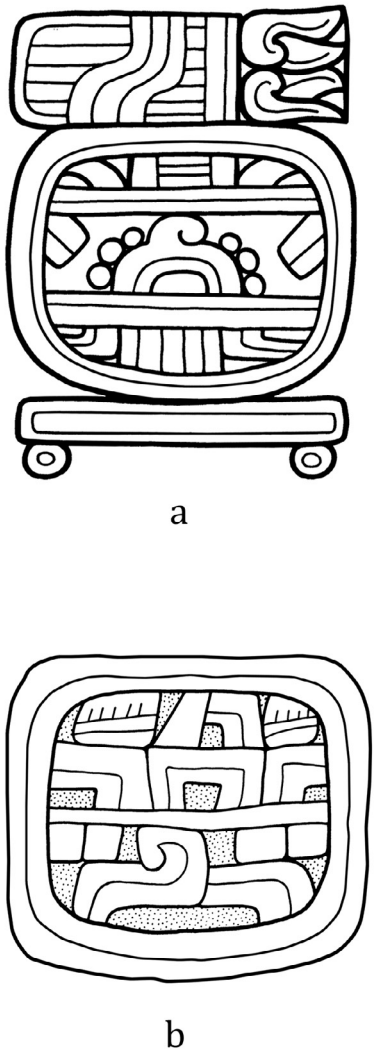

Figure 1.3: Calendrical glyphs recording named years and New Fire ceremonies. **a)** The date '7 Reptile Eye' qualified by a lit torch on Stela 1 of Piedra Labrada (from Helmke and Nielsen 2011: Fig. 10c). **b)** The 'Reptile Eye' glyph as a named year on an incised Teotihuacan tripod vessel (from Helmke and Nielsen 2011: Fig. 9a).

Names

Place names

Given the strong resiliency of toponyms in Mesoamerica, one of the fields where semantic decipherment can be confidently applied is that of place names, a field that has long attracted the attention of scholars (e.g. Angulo 1972: 50-51, 63, 1995; Berlo 1983, 1989: 20-23; Pasztory 1976: 186-187, 1988; Corona Sánchez 2000; Taube 2000: 7-10, 2011: 84-85; Nielsen 2006: 4; Nielsen and Helmke 2008; Helmke and Nielsen 2014, in press; Domenici 2017a). Teotihuacan glyphic compounds, toponyms included, are often composed by two glyphs, a main one (the "qualified") and a secondary, affixed one (the "qualifier") which provides the former with a specific identity or quality. At times, rather than an affixed sign, the qualifier could also be a surface pattern or colour. In Teotihuacan toponyms, the main sign is often a "geographical substantive" like a mountain, a plant or a cave, as is also seen in various other Mesoamerican scripts (Helmke and Nielsen 2014: 215).

Toponyms based on two different mountain-shaped geographical substantives have been identified at Teotihuacan on the base of their visual (and semantic) similarity with later Nawatl toponyms. A first geographical substantive is a group of (usually three, or more) joint peaks, usually with an inner dot. When affixed by flowers, for example, the sign is semantically understood as "Flower Mountain" (Figure 1.4a). The second geographical substantive is a polylobate sign whose crenellated border seems to qualify watery bodies such as waves and mountains (compare with the Nawatl *altepetl*, 'water mountain'). Examples of toponyms of this kind have been read as "Flower Mountain" (Figure 1.4b) and "Obsidian Mountain" (Figure 1.4c). The proposed semantic readings correspond to well-known Nawatl toponyms such as <*Xochitepec*> or <*Itztepec*> ~ <*Itztocan*> (Figure 1.4d-e) (Angulo 1972; Nielsen and Helmke 2008; Helmke and Nielsen 2014, in press; Domenici 2017a). Another case is that of what has been understood as "Star Mountain" and compared with the Nawatl toponym <*Citlaltepec*> (Helmke and Nielsen 2014: 85-91; Domenici 2017a: 51, 58). An alternative possibility, based on the common co-occurrence of stars, or halved stars and shells (e.g. Caso 1966: Fig. 12c, 13b), is that the qualifying infix should be read as a starfish logogram and, consequently, the toponym might be understood as "Starfish Mountain" (Figure 1.4f-h), or even as a specific form of a more general "Shell Mountain" (Caso 1966: Fig. 12a; 13a) (Figure 1.4i), semantically analogous to the Nawatl <*Teccistepec*> (Domenici 2017a: Fig. 3.3).[3] Several other mountain-shaped toponyms have been tentatively identified (Helmke and Nielsen 2014, in press). In all cases, locative suffixes are absent (as often happens in Epiclassic and Nawatl writing), probably due to the self-evident locative character of the geographical substantives.

Plant-shaped toponyms, where small glyphic collocations are inscribed within the lower part of

[3] It is interesting to note that the same "Star(fish)" sign infixes different logographic substantives. In a previous publication, I compared a star-infixed coyote with the Nawatl military title *sitlalkoyotl*, "Star Coyote" (Domenici 2017a: 58, Fig. 3.3). However, it is also possible that Gordon Whittaker is correct in interpreting the infix as a starfish or shell (Whittaker 2021: 193). Still, I suspect that the infixed sign may be a logographic qualifier rather than a redundant phonetic complement *koyo-* (from an unattested proto-Nawatl *koyo, 'shell'), as proposed by Whittaker.

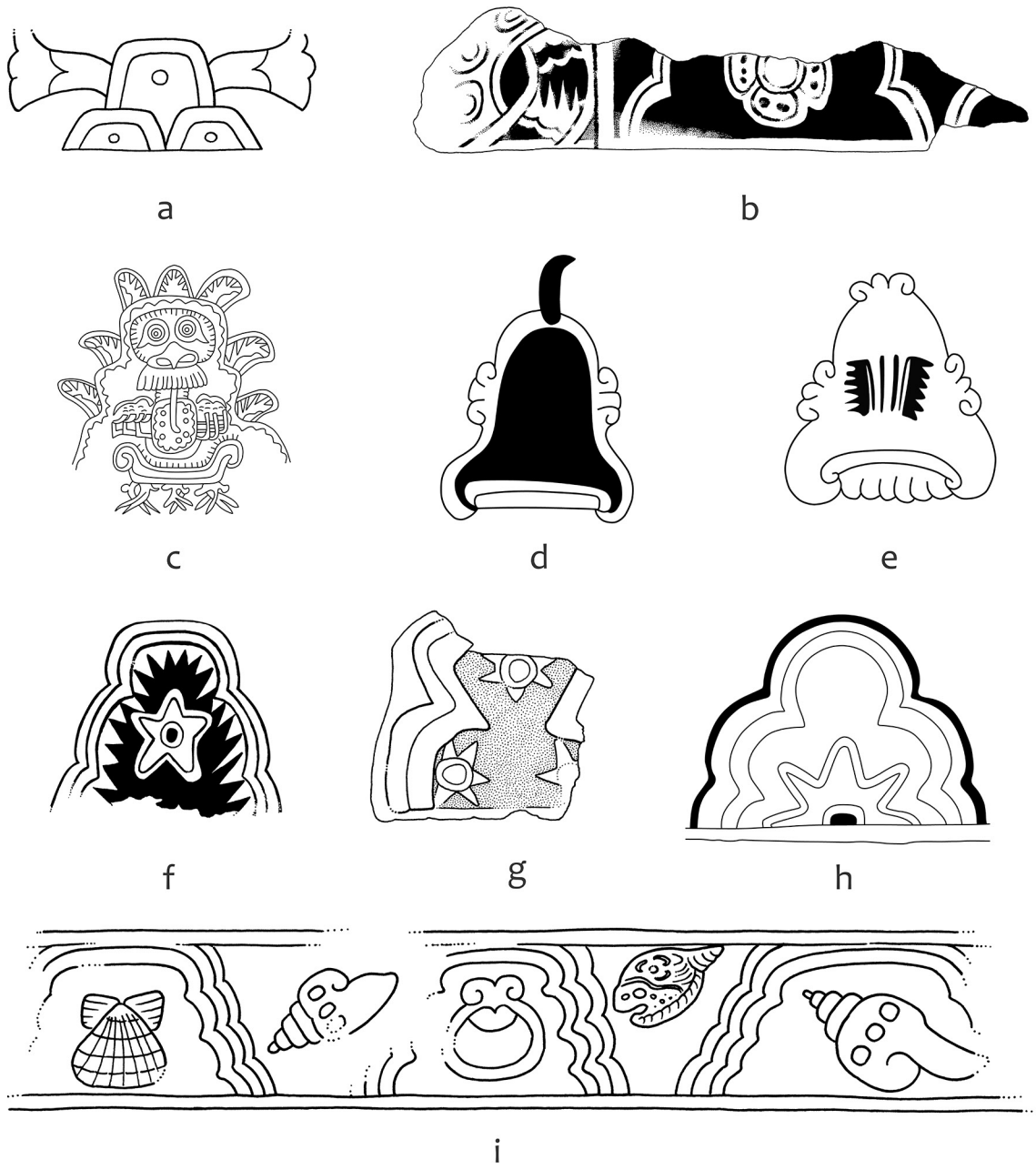

Figure 1.4: Toponyms involving mountain-shaped glyphs.
a) Flower Mountain (from Helmke and Nielsen 2014: Fig. 6b). **b)** Flower Mountain (from Helmke and Nielsen 2014: Fig. 6h). **c)** Obsidian mountains, Atetelco (from Helmke and Nielsen 2014: Fig. 13g-h). **d)** The toponym *<Itztepec>* in the *Matrícula de Tributos* (drawing by Elbis Domínguez from Domenici 2017a: Fig. 3.1w). **e)** The toponym *<Itztocan>* in the *Historia Tolteca Chichimeca* (drawing by Elbis Domínguez from Domenici 2017a: Fig. 3.1x). **f)** Star(fish) Mountain from Mural 2, Room 13, Conjunto del Sol (from Helmke and Nielsen 2014: Fig. 7a). **g)** Star(fish) Mountain on a ceramic adorno (from Helmke and Nielsen 2014: Fig. 7e). **h)** Star(fish) Mountain from La Ventilla (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.1r). **i)** Possible "Shell Mountain" toponyms (drawing by Christophe Helmke, after Caso 1966: Fig. 13a).

the trunks of the plants, are also common, as seen in the famous examples painted at Tepantitla and Techinantitla (Berlo 1983; Pasztory 1988). As brilliantly shown by George Cowgill (1992), one of the glyphic collocations from Techinantitla (Figure 1.5a) records the name of the plant: a red bone superimposed by a flower can be semantically deciphered as "Red Bone Flower", which neatly corresponds to the Nawatl <*Tlapalomixochitl*> (*Polianthes tuberosa*), from *tlapal-li* ('red'), *omi-tl* ('bone') and *xoochi-tl* ('flower'). At least in this case, the infixed name is somehow "redundant", since a knowledgeable observer could have also recognized the specific species by noticing the hanging tubular flowers typical of *Polianthes* sp. depicted in the plant-shaped substantive. The presence of various other flower glyphs in the glyphic collocations of the Techinantitla murals suggests that they also record plant-based names. Their toponymic value—as alluded by the plant-shaped geographical substantives, which are almost identical to those employed in Nawatl toponyms (Figure 1.5b)—may be at times reinforced by their twisted roots. Indeed, similar twisted roots (not associated to plants) also appear in other glyphic compounds at Teotihuacan (e.g. Figure 1.4c) and on a Teotihuacan style stela from Acatempa, Guerrero, as well as at Xochicalco (Figure 1.5d) and in Zapotec writing (Taube 2000: 9, Figs. 6, 17c, 30b; Urcid 2011: Fig. 6.6), where they likely have a locative value.

Besides the twisted roots, another recurrent Teotihuacan sign that may have a locative function is the so-called "shallow basin", often found at the base of complex glyphic collocations where it is sometimes associated with the twisted roots (Taube 2000: 9; Helmke and Nielsen 2011: Fig. 12b, 12d; see also Urcid 2011: 6.7a, 6.17d) (Figures 1.4c, 1.5c and 1.10a). Its similarity with the water-filled sign which occurs in Nawatl toponyms (Figure 1.5e-f), where it at times stands for *a* 'water', is evident. Since in the Nawatl script the sign clearly represents the earthen basin of a waterway, it is possible that the Teotihuacan "shallow basin" also represents an "earthly matrix", maybe conceptually equated with the open mouth of an earthly/watery being, as suggested by its formal similarity with the curved upper lip (a.k.a. *bigotera*) of the Storm God (but rotated 180°) and by the fact that the almost identical "earthly matrix" of the day name Water is at times represented as the fanged mouth of a reptilian in Mixtec manuscripts such as *Codex Nuttall ~ Tonindeye*. Helmke and Nielsen noticed that at Teotihuacan, Xochicalco and Cacaxtla the shallow basin can also contain calendrical signs, thereby proposing that it could function as a preposition meaning 'at' and 'on', with both spatial and chronological value (Helmke and Nielsen 2011: 21-22).

As also happens in Nawatl writing, the substantive elements of toponyms may show a variety of shapes, some of them not exclusive of place names. On the *taludes* of Portico 1 in the White Patio of Atetelco we see a series of coyotes whose bodies are infixed with a circular sign marked by oblique bands (Figure 1.5g). The overall structure of the glyphic compound is almost identical to that of the Nawatl toponym glossed as <*Coyoacan*> in the *Matrícula de Tributos* and the *Codex Mendoza*, where a phonetic complement in the shape of a circular hole (*koyo-*, from *koyoktik*, 'perforated') is infixed within the body of a coyote (**KOYO**) (Figure 1.5h-i). Even if the specific value of the banded circle at Atetelco is not clearly understood, the possibility that the whole glyphic compound records a place name is intriguing (Domenici 2005: 131-133, 2017a: 54).[4]

A few words on signs that might record the ancient name(s) of Teotihuacan are in order. David Stuart (2000) demonstrated that in several Classic Maya inscriptions a 'Reed' glyph (Figure 1.5c) was employed to record the Ch'olan Maya term *puj*, 'reed', which was used as the name of Teotihuacan, being a clear Classic antecedent of the Postclassic Nawatl place name *Tollan*, 'Place of Reeds'. Given the formal and semantic analogy between the Maya glyph *puj* and the Teotihuacan Reptile Eye glyph, the latter may well have been used as a place name linked with the city or with its wider lacustrine, reed-rich environment. However, since place names are scalar, so that they can refer to a whole region, to a settlement, or to specific sections of a settlement (Helmke and Nielsen in press), it is conceivable that multiple place names were associated to Teotihuacan, to the Basin of Mexico and even to larger regions. Indeed, on the famous *marcador* of Tikal, the place of origin of individuals and supernaturals associated with the Teotihuacan *entrada* of AD 378 is recorded as **5-TINAM-WITZ**, 'Five Cotton Mountains', a reference to the high snow-capped mountains of Central Mexico (Stuart and Houston 2018). Conversely, other toponyms could have named specific urban sectors[5] or even single architectural spaces or buildings.

The Names of Buildings

As other Mesoamerican peoples (Velázquez 2009), Teotihuacanos attributed specific names to buildings and architectural spaces. In discussing the names of buildings, we must consider two different but overlapping forms of naming. On the one hand, place

[4] I suspect the oblique bands could be "property qualifiers" (also called semantic determinatives) marking "stony" entities. Similar oblique bands, for example, mark the mountain-shaped geographical substantives of Zapotec and Mixtec place names. Two parallel bands, but with a characteristic "wavy" shape, also mark stones in Nawatl writing and iconography.

[5] Gordon Whittaker proposed a Nawatl reading of the "disembodied hand" Teotihuacan glyph as **MAKIZ** (from *makiz-tli*, 'bracelet'), as the root of *Makizko* or *Makiztlan*, toponyms associated to places within or nearby Teotihuacan since early colonial times (Whittaker 2012; 2021: 190-192).

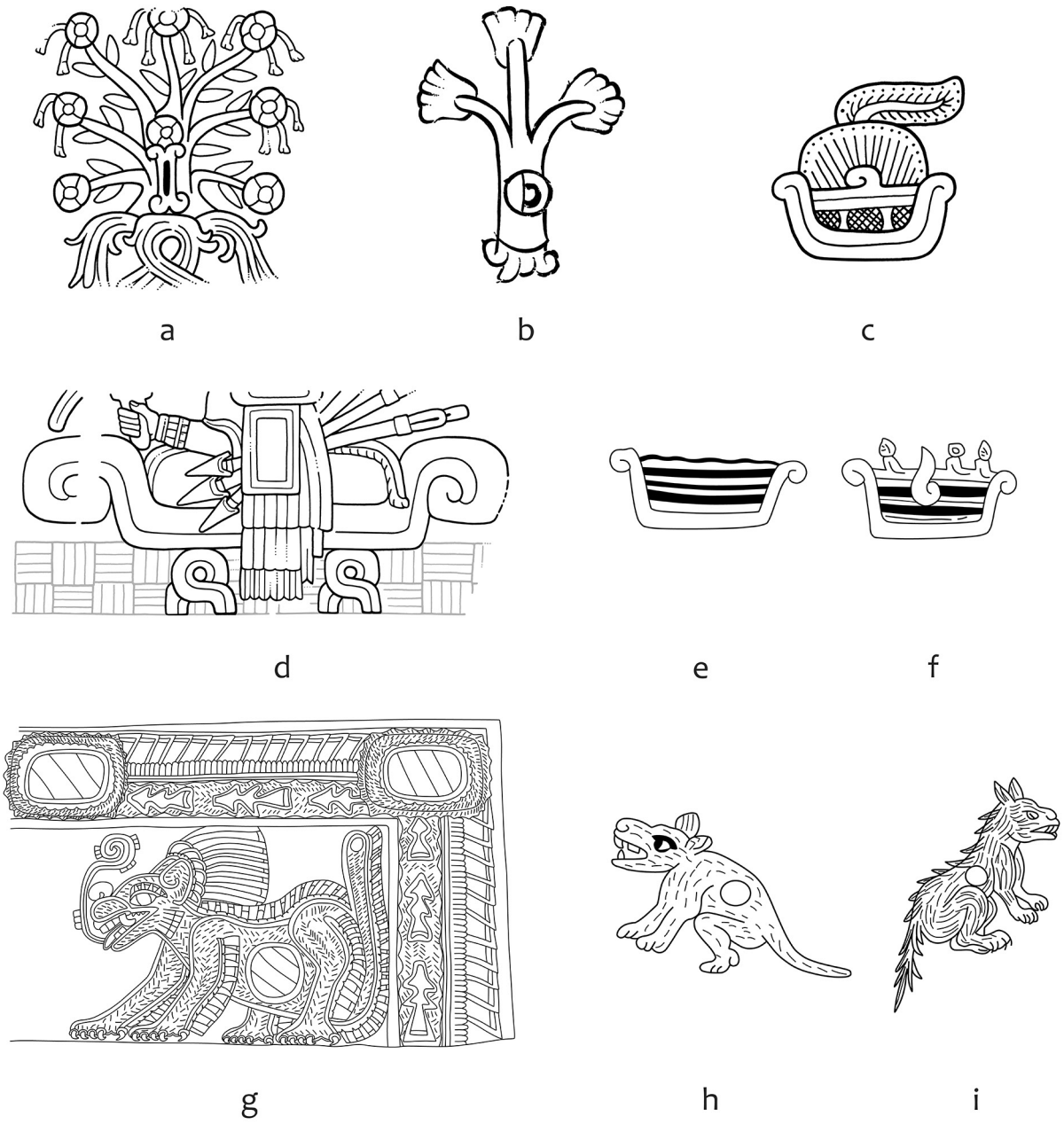

Figure 1.5: Toponymic elements and glyphic compounds.
a) The 'red bone flower' compound in the murals of Techinantitla (drawing by Christophe Helmke, after Berrin 1988: Plate Ia-f). **b)** The nawatl toponym <*Cuahuitlixco*> from the *Codex Mendoza*, fol. 24v (drawing by Christophe Helmke). **c)** Maya glyph for *puj*, 'reed' (from Helmke and Nielsen 2011: Fig. 12c). **d)** The shallow basin and twisted roots forming a toponym on the Temple of the Feathered Serpents at Xochicalco (from Helmke and Nielsen 2011: Fig. 12d). **e)** The toponym <*Atlatlauhcan*> from the *Matrícula de Tributos* (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.1y). **f)** The toponym <*Cuitlahuac*> in the *Codex Mendoza* (drawing by Elbis Domínguez from Domenici 2017a: Fig. 3.1z). **g)** A full-figure coyote glyph in the murals of Portico 1 of the White Patio at Atetelco (drawing by Elbis Domínguez from Domenici 2017a: Fig. 3.1a). **h)** The toponym <*Coyoacan*> in the *Matrícula de Tributos*, p. 24 (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.1b). **i)** The toponym <*Coyoacan*> in the *Codex Mendoza*, fol. 47r (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.1c).

names were applied directly on the architectural elements they were naming, as an expression of the self-referential nature of many Mesoamerican texts. For example, the abovementioned coyote-shaped toponyms(?) (Figure 1.5g) could be understood as "tags" applied to Portico 1 of Atetelco's White Patio to record either its name or its affiliation with a place or polity located somewhere else. A similar case is the sequence of pumas depicted on the *taludes* of Portico 13, Tetitla, where the animals are depicted eating human hearts while resting on a white bench (Figure 1.6a). If the act of eating human hearts refers to a 'Heart-Eater' title (see below), the white bench strongly recalls similar elements depicted in the Nawatl toponyms of <*Ehecatlapechco*> and <*Oztotlapechco*>, where they function as the logogram **TLAPECH**, for *tlapech-tli*, 'bench' (Figure 1.6b). The glyphic value of the "bench" sign in the Teotihuacan script is further confirmed by its appearance in a glyphic compound traced on a vessel from Escuintla, Guatemala (Taube 2000: Fig. 16c). Thus, the Tetitla pumas may well tag Portico 13 as "The Place of the Heart-Eater's Bench" (Domenici 2017a: 56-57). Several other forms of building-tagging are known at Teotihuacan, such as variously shaped *almenas* (Nielsen and Helmke 2014: 122), series of *chalchihuites* (a sign that in Nawatl writing acts as a qualifier distinguishing the logogram **TEK^{W}**, used in *tek^{w}+pan*, *teekpan*, 'lordly place', from the more general **KAL**, *kal-li*, 'house') or specific iconographic motifs (see also Kubler 1973). An interesting example of the latter is the repetition of fanged nose ornaments which — together with *chalchihuites* — mark, arguably as badges of a specific religious or political office, the southern façade of the Platform of Interlaced Volutes in the Edificios Superpuestos architectural complex (de la Fuente 1995: 27-43, Fig. 3.6, Lám. 6-11).

On the other hand, glyphic compounds affixed to a logogram that stands for an architectural structure (such as 'house', or 'temple') can be found on a variety of supports, thus being physically detached from the building they name (Taube 2011: 86-87). Claudia García-Des Lauriers related the Teotihuacan depictions of a building superimposed by a "hand + darts" glyphic compound to the Aztec building named *tlakochkalko*, 'House of Darts Place' (García-Des Lauriers 2008; see also Nielsen and Helmke 2014) (Figure 1.5c-e). Her proposal has been further supported by Peter Bíró (2020), who recently suggested that the *Winte' Nah*, the Classic Maya name of a Teotihuacan building associated with coronation events (maybe to be identified with the *Adosada* of the Sun Pyramid; Fash *et al.* 2009), should be translated more narrowly as 'House of Darts' rather than as the 'Root House' as it was previously understood.

Several other names of buildings, such as the 'Serpent Mat House' (Figure 1.5f), the 'Fire House', the 'Bird House', etc., which are always composed by a qualified element (the 'House') and a qualifier (an affixed glyph recording its specific name), have been convincingly identified by Jesper Nielsen and Christophe Helmke (2014). A similar recurrent motif which may be related with buildings is a feathered frame (*resplandor*), often associated to Storm God imagery and marked by a variety of motifs among which the star(fish) is especially common in pictorial and sculptural contexts (e.g. Figure 1.11c; see also the Xalla jaguar sculpture in Manzanilla and López Luján 2001), possibly as a reference to some "Star(fish)-related" temple or architectural space. Indeed, the feathered frame can be a representation of a building's upper façade, an element which at Teotihuacan has a strong visual and conceptual overlap with headdresses, as also shown by the existence of star(fish)-marked headdresses (Taube 2011: 86; Nielsen and Helmke 2014: 130-133, 2019: Fig. 4b). This overlap is especially interesting in sight of the fact that in the Nawa world the names of buildings were at times at the base of political titles, as in the case of the high-ranking military officer called *Tlakochkalkatl*, 'He of the House of Darts'.

Personal names and titles

In several ground-breaking essays, Clara Millon (1973, 1988) first tackled the topic of personal names or titles[6] commenting on the murals from Techinantitla where individuals wearing complex attires and tasselled headdresses are flanked by small glyphic "labels" composed of a tasselled headdress affixed by a variable element (a feathered serpent, a Storm God head, a raptor claw, a bent arm prefixed by an eye, etc.), arguably recording the name and title of each individual (Figure 1.7a). In other words, in the pictorial representation, the headdresses (and the whole attire) would function as iconographic qualifiers of the individuals, whereas in the glyphic collocation they would constitute the qualified elements, affixed by name-recording glyphic qualifiers.[7] If the above-mentioned "bent arm" sign prefixed by an "eye" (a sign with clear watery associations in Teotihuacan) records a Classic antecedent of the Postclassic <*Acolhua*> name, the glyphic qualifiers could record ethnonyms or names of corporate groups rather than individual ones. As also observed by Millon, a similar naming pattern is observable on the Calpulalpan bowl, where four individuals (three of them wearing a shell-platelet

[6] On this general topic, see Berlo 1989: 27-33; Taube 2000, 2011; Conides and Barbour 2002; Nielsen 2004; Helmke and Nielsen 2011; Domenici 2017a.

[7] The sequence of individuals in the Techinantitla paintings has been often conceived as a synchronic image of various lords and, consequently, as an allusion to collective forms of government. In contrast, Albert Davletshin (2017, 2021), paralleling a proposal put forward, among several others, by René Millon (1988: 91), has suggested that it could also represent a synoptic representation of a dynastic sequence of lords.

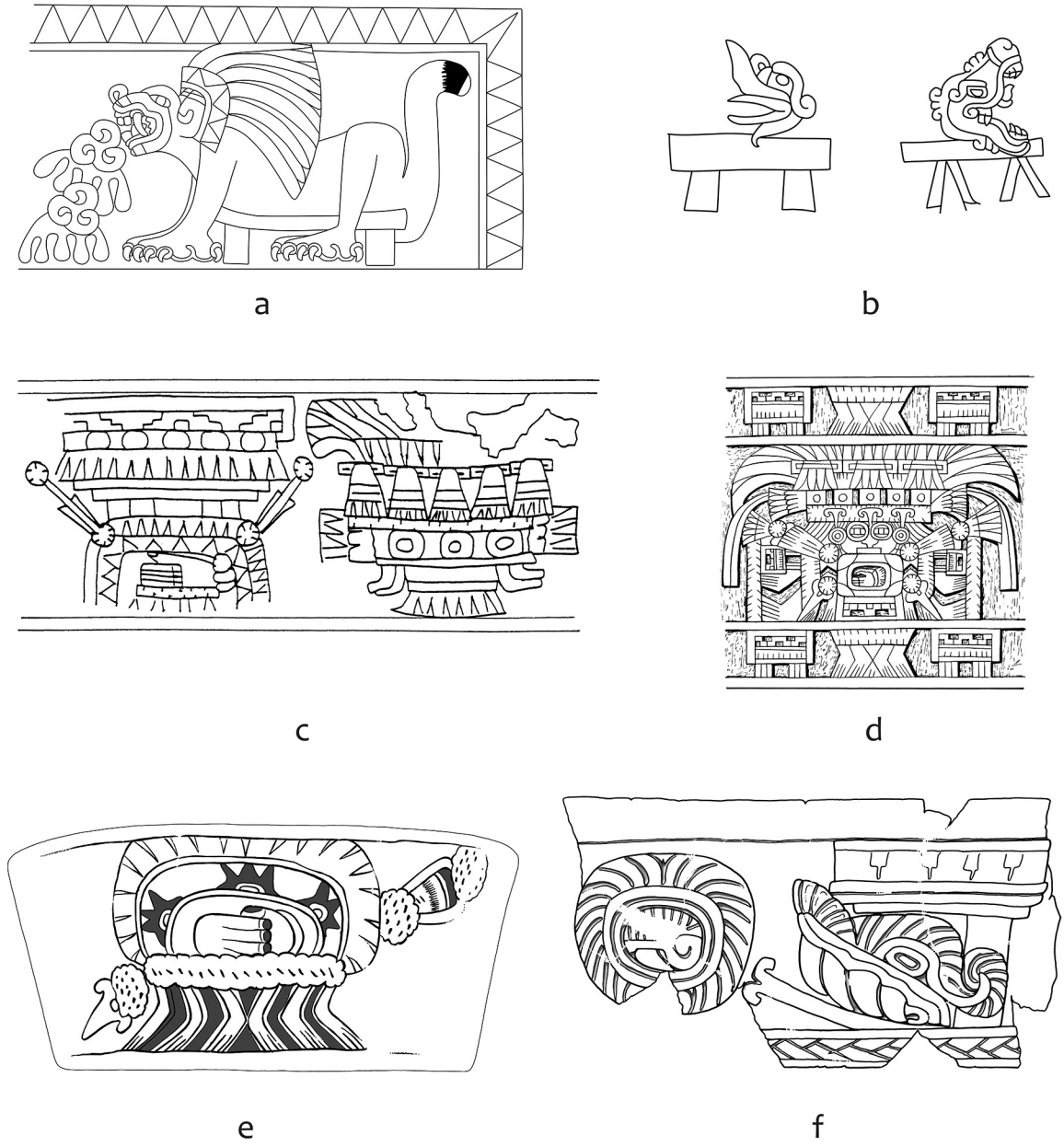

Figure 1.6: The names of buildings.
a) A heart-eating puma, Tetitla Portico 13 (drawing by Elbis Domínguez from Domenici 2017a, Fig. 3.1k). **b)** The toponyms *<Ehecatlapechco>* and *<Oztotlapechco>* in the *Codex Mendoza*, fol. 12r and 42r (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 31k). **c)** The 'house of darts' (from Conides Cynthia and Barbour 2002: Fig. 7). **d)** The 'house of darts' (from Séjourné 1966: Fig. 87). **e)** A "hand + dart" compound within feathered frame (drawing by Christophe Helmke). **f)** The 'Serpent Mat House' (from Nielsen and Helmke 2014: Fig. 8).

headdress whereas the fourth one sports the tasselled headdress) face variable glyphs (one of them including the tasselled headdress itself), which would, again, record their offices and names/titles (Millon 1973, 1988).

In both examples, and notwithstanding the possible reading of the changing qualifiers, the tasselled headdress (used both as an image and a glyph) clearly alludes to a specific office of some importance in Teotihuacan military expeditions abroad, as was stressed by Clara Millon (1973) and Janet Berlo (1984). It could well represent the title of the paramount ruler or king of Teotihuacan (see Davletshin 2021). Nonetheless, an engraved tripod vessel where the tasselled headdress alternates with the "House of Darts" glyphic compound suggests a direct relationship between the two (Nielsen and Helmke 2019: Fig. 9) (Figure 1.6d).

After Millon's pioneering insights, the role of headdresses as badges of offices both in imagery and writing has been discussed by several scholars (e.g. Taube 2000, 2011; Conides and Barbour 2002; Corona Sánchez 2000; Headrick 2007; Domenici 2017a; Nielsen and Helmke 2019). In their recent contribution, Nielsen and Helmke (2019) emphasize the role played by the Year Sign headdress as the badge of a paramount political office, also indicating how headdress-taking ceremonies (the relevance of which is well-known in other Mesoamerican regions) were alluded both in writing and imagery at Teotihuacan. Moreover, headdresses often include images of stylized houses, further strengthening the rather strict connection between political/religious offices and specific buildings (Nielsen and Helmke 2014: Fig. 12b) (Figure 1.7b).

Some titles or names were likely recorded by glyphic compounds that do not include the depiction of a headdress. A recurring one, for example, depicts an animal (most often a feline or a canid) eating a human heart (Taube 2000: 30, Fig. 23a-c) (Figure 1.7c-e), also seen as the main sculptural motif of the *Adosada* platform of the Sun Pyramid (Sarabia Gonzáles and Núñez Rendón 2017: 65-67). As noticed by Helmke and Nielsen (2011: 25-28; 2021: 41-42) this glyphic compound, which has its counterparts in various Epiclassic and Early Postclassic sites, could well refer to a 'Heart-Eater', a warrior-priest title that is a close match to the Nawatl name of priests/sorcerers called <*teyollocuani*>, 'one who is the heart-eater', thereby constituting another strong case of continuity linking Teotihuacan practices to those of later central Mexican societies.[8]

In several instances, the full-figure of a hardly identifiable bird (which, in frontal depictions, shows traits of an owl) is infixed by various circular glyphs such as a four-petalled flower or, within a four-petalled cartouche, the Reptile Eye glyph (Figure 1.8a-b). Similarly, day name glyphs also appear attached to individuals, at times infixed in their garments. It is hard to tell which kind of names they record, but the usage of calendrical signs suggests they could be related with the pan-Mesoamerican naming pattern based on the 260-day divinatory count. The scarcity of numeral coefficients (which are nonetheless attested, such as at La Ventilla, see King and Gómez Chávez 2004: 240, Fig. 20) would seemingly counter this hypothesis, but it is worth remembering that calendrical signs used as name glyphs in absence of numeral coefficients are also attested elsewhere (*e.g.* Chichen Itza; Helmke and Nielsen, this volume, Fig. 3.4a-b).

Among the bird-shaped glyphic collocations, a much-discussed one is the full-figure bird infixed by the "hand + darts" glyphic compound, thus forming a larger compound that Hasso von Winning (1948, 1987: I, 85) named "Owl and Weapon" (Figure 1.8d). Even if the bird is not the only animal infixed by the "hand + dart" compound (*e.g.* von Winning 1987: I: Chap. IXB: Fig. 5)[9], its relevance is due to the various Classic Maya mentions of the Teotihuacano individual who oversaw the so-called *entrada* of AD 378, a person described on the Tikal *marcador* as "the fourth of the succession [of kings]". His name glyph, often composed by an owl superimposed (or prefixed) by the sign of a hand grasping a spearthrower, long known as "Spearthrower Owl", is now read in Ch'olan Maya as *Jatz'om Kuy*, 'Striker Owl' (Stuart 2000; Nielsen and Helmke 2008; Beliaev *et al.* 2016: 166-171; Davletshin 2021). The similarity between his name glyph and the "bird + hand + darts" compound found in Teotihuacan is readily apparent, so that the latter has been interpreted as the Teotihuacano version of the former (Figure 1.8c). Be as it may, it is interesting to note that the bird-shaped name/title almost always includes a hand sign that, unless it is a phonetic complement, may well indicate a verbal expression or a deverbal agentive noun analogous to the *Jatz'om* component of the corresponding Maya name (which could be translated either as 'will strike' or 'striker'; Davletshin 2021, in press). The "bird + hand + darts" compounds are often paired with a half star-marked feathered frames (e.g. Figure 1.6e and 1.11c; see also a tripod vessel at the Dallas Museum of Art[10] and the Tiquisate vessel mentioned in footnote 9) or half star-marked borders (e.g. Linné 2003: Fig. 26 and the almost identical vessel seen at Sotheby's[11]), suggesting a relationship between the name and a possible, "Star(fish)-related" architectural(?) space.[12]

[8] On folio 2r of *Codex Vaticanus A* the same glyph records <*Teyollocualoyan*>, the name of an underworldly place (Domenici 2017a: 57, Fig. 3.1).

[9] It is interesting to note that at least on one instance the compound lacks the darts, as seen in a Tiquisate moulded vessel at the Posada Belén, Guatemala City; see: http://www.maya-archaeology.org/Teotihuacan_Tiquisatearcheology/cylindrical_tripod_support.php [accessed 19 June 2022]

[10] https://collections.dma.org/artwork/5312445 [accessed 19 June 2022]

[11] https://www.sothebys.com/en/auctions/ecatalogue/2010/african-oceanic-and-pre-columbian-art-n08638/lot.52.html [accessed 19 June 2022]

[12] In a recent presentation, Davletshin (2021) showed the image of a reconstructed vessel from the Berlin Ethnological Museum where the "bird+dart" compound is infixed by a half-star rather than the usual hand. The whole compound is topped by the tasselled headdress and is framed by a half star-marked feathered frame. It is not the only instance where the dart and shield sign is infixed by a glyph different form the hand and it is difficult to say if the half star actually substitutes the hand or if it is superimposed to it (as often happens in Maya writing). However, the vessel suggests that the "bird+dart" name has a close relationship not only with the tasselled headdress but also with a "Star(fish)"-marked space. An association between the bird and the half-star can also be observed in the mural paintings of Zone 5A, Room 17, Mural 2 (Miller 1973: 86, Figs. 135 and 136).

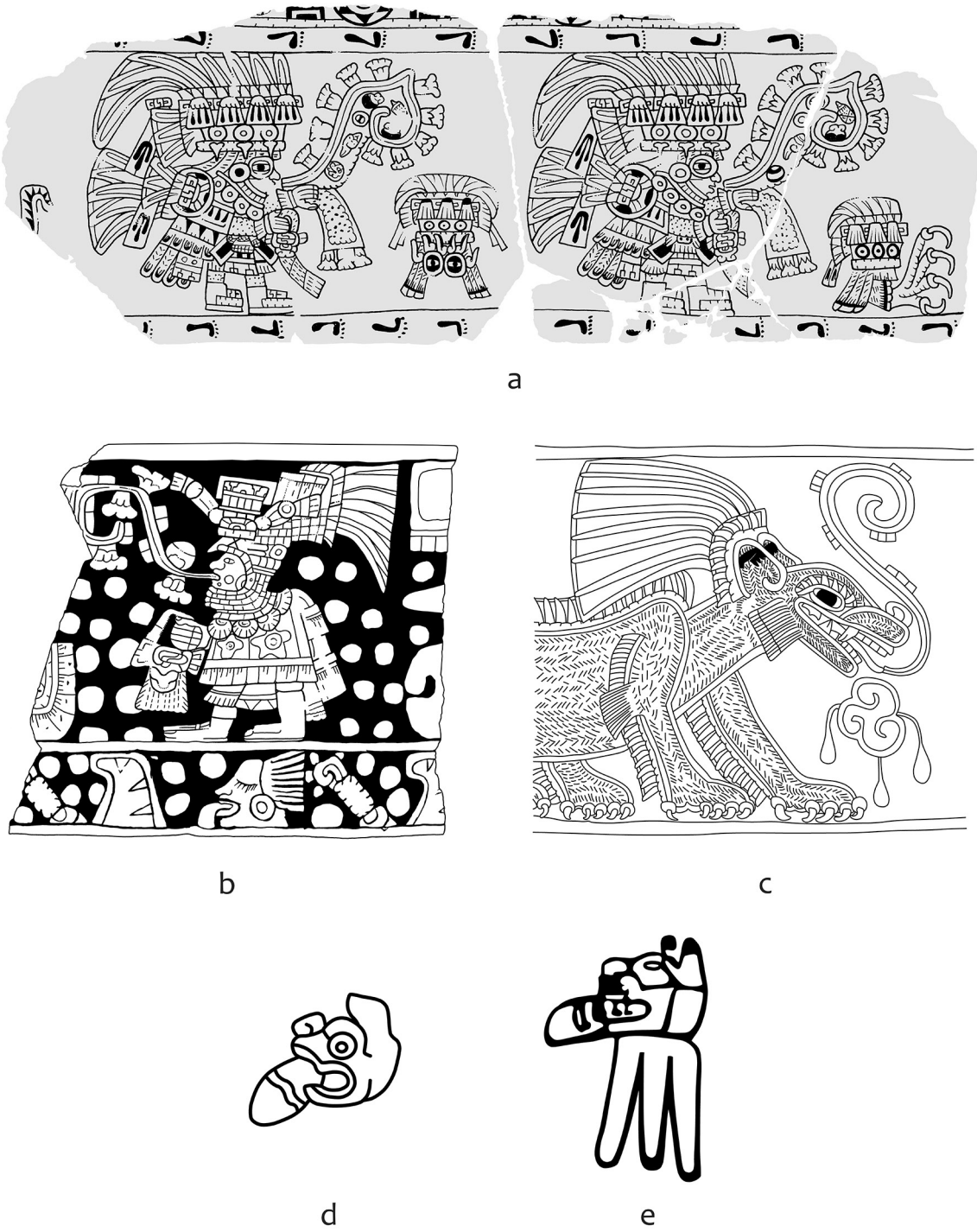

Figure 1.7: Personal names and titles.
a) "Processional figures" flanked by glyphic labels, Techinantitla (drawing by Christophe Helmke, after Berrin 1988: Fig. V.3 and V.4). **b)** Individual with "house + darts" glyphic compound infixed in the headdress (from Nielsen and Helmke 2014: Fig. 12b). **c)** Example of the 'heart-eater' title in the murals of Atetelco (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.1n). **d)-e)** The heart-eater titles from glyphic compounds at La Ventilla (drawings by Elbis Domínguez from Domenici 2017a: Fig. 3.1o-p).

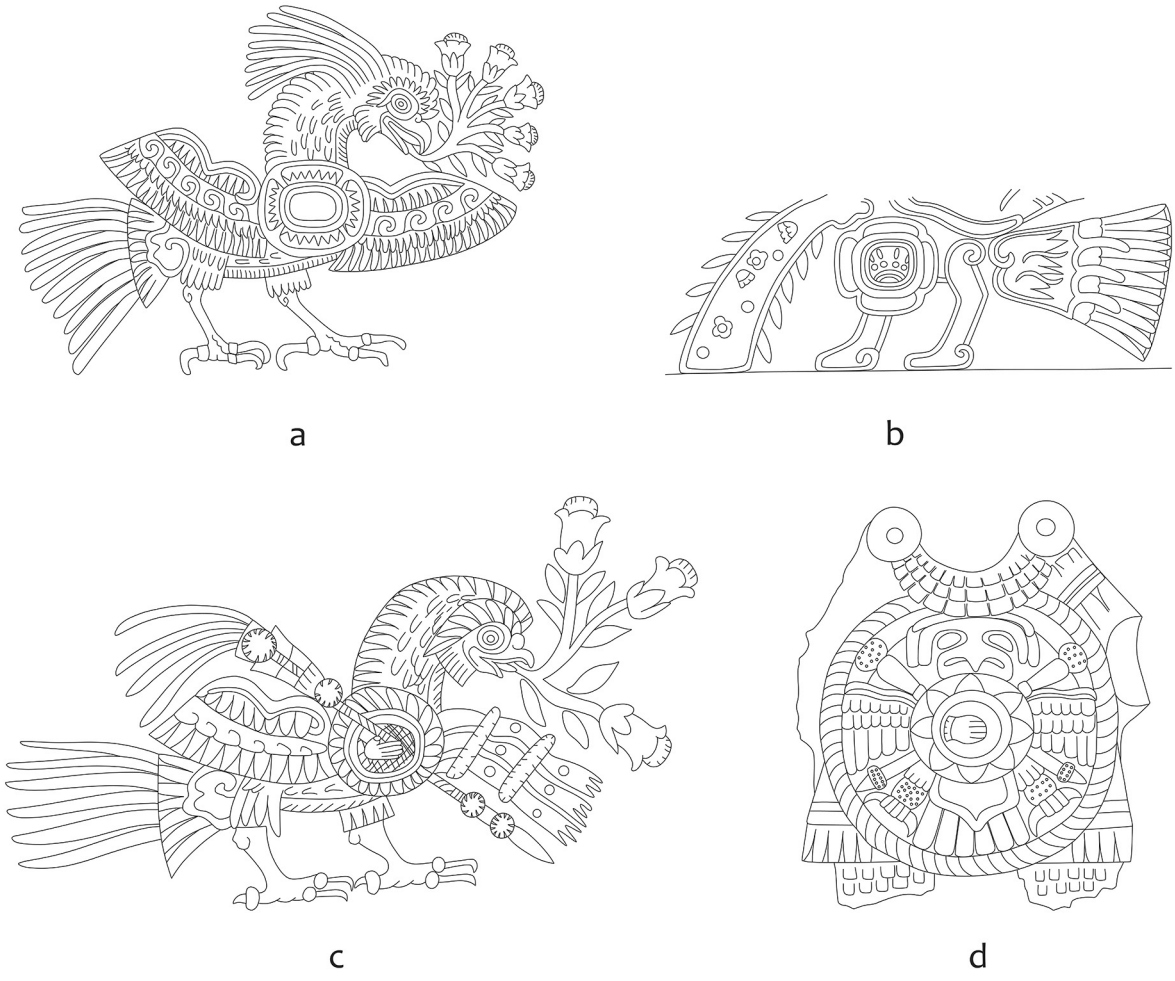

Figure 1.8: Personal names and/or titles.
a) Bird infixed by a four-petalled flower (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.2a). **b)** Bird or butterfly infixed by the Reptile Eye glyph within a four-petalled cartouche (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.2b). **c)** Glyphic compounds involving a bird with "hand + dart" glyphs, in the murals of Techninantitla (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.2c). **d)** The same type of compounding on a ceramic figurine (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.2d).

Verbs

Our knowledge of possible verbs recorded in Teotihuacan inscriptions is admittedly limited. This could be a consequence of our inability to identify them, but also of the reduced use of verbal expressions in a mostly onomatographic system, where actions are usually conveyed by the pictorial imagery to which texts are attached. However, as previously commented, glyphic collocations containing "disembodied hand" signs could at times record action verbs or deverbal nouns. For example, glyphic compounds depicting hands scattering seeds (Tetitla Portico 1, Mural 1; Tetitla, Room 11, *cenefa* of Mural 1) could record the verb 'to scatter', an action often depicted in Teotihuacan imagery and also recorded in Classic Maya inscriptions (Taube 2000: 46-47; Helmke and Nielsen 2021: 30, 45-46, 53). Moreover, in the case of Tetitla Portico 1 (Figure 1.9a), the two scattering hands are attached to an "enclosure" sign similar to the one which in Cacaxtla and Xochicalco seems to have a verbal function (Berlo 1989: 26; Helmke and Nielsen 2011: 45-46; Helmke *et al*. 2019: 69; Helmke and Nielsen 2021: 45-46, 53). A hand holding forth a shell-platelet helmet (Figure 1.9b) seems to record a verb related with the transfer of the office materialized by the headdress (Nielsen and Helmke 2019: Fig. 8d), whereas a human hand holding a torch (Figure 1.9c) could correspond to the verb 'to torch', 'to light on fire', an action commonly associated to founding rituals of the kind known as *toma de posesión* (Nielsen and Helmke 2018: 80-83, Figs. 4.2b and 4.4b). It is important to note that these examples do not imply that *all* of the "disembodied hand" signs necessarily have a verbal function, since some of them may well

have other logographic or phonetic values, as also happens with hand signs in Classic Maya hieroglyphic writing as well as Nawatl writing.

Human footprints are a pan-Mesoamerican sign, used both in imagery and texts to convey the idea of travel and related verbs of movement such as 'to walk', 'go', 'leave', and 'to arrive'. At Teotihuacan these often appear in iconographic compositions, some of these recently interpreted as possible early manifestations of a Central Mexican cartographic-narrative tradition (Helmke *et al.* 2017, 2019). They are also seen in glyphic compounds (e.g. Taube 2000: Fig. 23g, 2011: Fig. 5.18b) where they could deploy a verbal function; however — similarly to their use in Nawatl writing — when enclosed by parallel lines these most probably correspond to a logogram for 'path', 'road' or 'crossroad' (Taube 2000: Fig. 20h).

Finally, a sign composed by a half-star emitting water has been interpreted as a war-related verb, probably at the origin of the similar one employed in the Maya area after the Teotihuacan *entrada* (Helmke and Nielsen 2014: 89-90, Fig. 9b-e; Nielsen and Helmke 2017a: 143-144).

Texts as images

Linear texts seem to have been exceedingly rare in Teotihuacan. Significantly, some of the clearest examples of linear or columnar texts are found on portable objects proceeding from South-western and South-eastern Mesoamerica rather than from Teotihuacan itself (Taube 2000: 34-43). However, short linear arrangements of glyphs may be enclosed within grids in La Ventilla's Plaza de los Glifos or affixed to speech-scrolls (Cabrera 1996; Taube 2000: 30-34, 2011: 88-90; Colas 2011; Nielsen 2014). In the former case, where the grid is probably a later addition, columnar sequences of three glyphs are introduced by similar signs (Storm God heads), whose spatial arrangement suggests a bustrophedic reading order (Taube 2000: Fig. 29a; Nielsen and Helmke 2011; Helmke and Nielsen 2021: 46-47). Notwithstanding the interest of these examples, most glyphic compounds in Teotihuacan are either isolated or arranged in repetitive or alternating sequences. This scarcity of linear arrangements has been one of the features that has hindered the visual recognition of Teotihuacan glyphs and texts, further impeded by the fact that they do not display easily recognizable formal qualities, such as small dimensions or grouping into neatly defined "blocks" with a distinctive shape (Taube 2000: 24). It was not by chance, then, that some of the texts recognized in the earliest studies (e.g. Millon 1973) are precisely those that *do* have a distinctive dimensional quality, and have the appearance of small "captions" flanking the human figures that these name.

The visual recognition of glyphic compounds is further hindered by playful scribal habits. Teotihuacan scribes assembled highly iconic glyphs in compounds purposefully endowed with a seemingly mimetic appearance, thus "disguising" their scribal quality (Domenici 2017a). Clear examples of this habit are those where the abovementioned "hand" and "darts" glyphs — rather than simply juxtaposed as is otherwise typical (Figure 1.6c-e and 1.8d) — were assembled *as if* the darts were deliberately held by the hand of the bird into which the compound is infixed (Figure 1.8c),

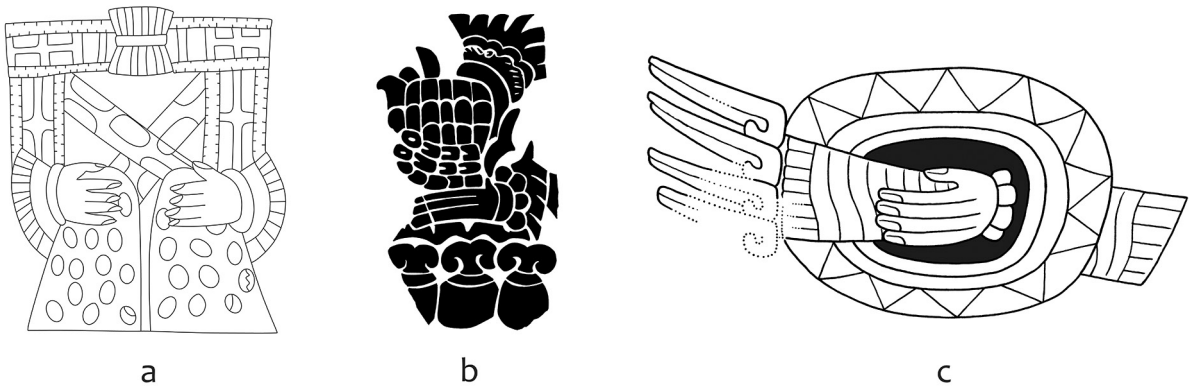

Figure 1.9: Possible verbal glyphic compounds.
a) Glyphic compound with scattering hands (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.5d). **b)** Ceramic sherd with a hand presenting a headdress and a necklace (drawing by Christophe Helmke, after von Winning 1981: Fig. 5).
c) A hand wielding a torch as a glyphic compound (drawing by Christophe Helmke, from Nielsen and Helmke 2018: Fig. 4.2b).

thus visually enhancing the agentive role of the bird. Similarly, in the so-called Jade Goddesses of Tetitla Portico 11, "disembodied hands" are affixed to a probable toponymic compound (at least judging from the presence of a "shallow basin") *as if* they were part of a seemingly mimetic human figure (Figure 1.10a). The playful scribal habit at work in these and other examples defies our ability to discern which parts of the visual composition are glyphs to be read, that is, to be read as written signs. I elsewhere referred to this tricky scribal attitude as "the trap of verisimilitude" (Domenici 2017a: 59-60). To make a comparison with a case drawn from Western scribal culture, we are in a position similar to that of an illiterate person confronted with the initial of a Medieval illuminated manuscript: not knowing the Latin alphabet, he would be unable to distinguish the alphabetic sign from the pictorial imagery in which it is playfully embedded.

However, in many instances the large and formally diverse glyphic compounds, being the result of the juxtaposition of different scribal signs, do have an "incongruent" aspect, which makes them easily recognizable as texts (Taube 2011: 86) (e.g. Figures 1.9a and 1.10b-d). Drawing a descriptive lexicon from the work of Carlo Severi (2004) I elsewhere described this incongruence as *counterintuitivity*, a quality that enhances the *saliency* of signs, that is, their ability to stand out from the associated imagery and to denounce their codified, scribal quality, requiring a specific act of decodification (Domenici 2017a: 59). At times, the counterintuitive character of the glyphic compounds is overtly evident, whereas in other instances it is more nuanced. For example, when we see that an obsidian knife is counterintuitively juxtaposed to the paw of a coyote (Figure 1.10e), we must understand that we are not looking at a coyote holding a sacrificial knife, but that the latter works as the qualifying element of a coyote-shaped logogram, so that the whole compound is likely to be read as "Obsidian Coyote" or even "Knife Coyote".[13] An interesting example of counterintuitivity is that of the abovementioned "Jade Goddesses" of Tetitla, where the glyphic character of the two disembodied hands is denounced by several features, including the "absurd" position of their fingernails (Figure 1.10a).

The high iconic quality of Teotihuacan glyphs and their often-large dimensions led Karl Taube to qualify these as an *emblematic* "font" (Taube 2000: 21-22). We could say that Teotihuacanos strongly favoured the use of "full-figure" glyphs, further enhancing their emblematic character, that is, their iconicity and semiotic density (Houston and Stauder 2020), as seen in the example of the bird holding the darts. Nevertheless, we also have ample evidence of the use of "head-variants" (e.g. the many heads of the Storm God) and of "synthetic" or "condensed" glyphs (Helmke and Nielsen 2021: 41). One of the best examples to show the usage of both "full-figure" and "synthetic" versions of a same glyph is the abovementioned case of the Atetelco coyotes, where the full-bodied animals with circular infixes can be described as full-figure glyphs (see Figure 1.5g and 1.6a). In the overhanging frame or *cenefa*, however, identical circular banded glyphs are framed by a cartouche marked by the linear strokes, which in Teotihuacan visual culture denote coyote fur. Thus, the circular glyphic compound within the *cenefa* is clearly the "synthetic" version of the nearby full-figure compound. In the former, the circular "furry" frame condenses the "qualified" main sign, whereas its inner glyph acts as its qualifier.

This example also illustrates that *pars pro toto* is an important principle in Teotihuacan scribal culture, allowing the condensation of full-figure or head variant glyphs into more simplified or shortcut "synthetic" ones. The same principle, for example, is at work when a single tassel stands for the whole Tasselled Headdress (Millon 1973: Fig. 1), when a single *almena* stands for a whole 'house' sign (Helmke *et al.* 2013: Fig. 6b; Nielsen and Helmke 2014: 118), when the leg of coyote stands for the whole animal (Nielsen 2004), or when the head variant of a glyph composed by a Storm God head with a quincunx attached to the mouth (Taube 2011: Fig. 5.21a) is condensed into its synthetic version by reducing the god's head to its buccal area, as seen for example on a stela in the Frida Kahlo museum (Taube 2011: Fig. 5.18c; Nielsen and Helmke 2017a: Fig. 18.4). A similar case is that of the 'Heart-Eater' title discussed above, which can be depicted either in a full-figure form or in more reduced head variants (Taube 2000: Figs. 23a-c; see Helmke and Nielsen 2021: 41-42 for further examples) (Figure 1.7c-e).

Many (but not all) "synthetic" glyphs are often enclosed in circular cartouches with different kinds of frames ("feathered", "flowery", "furry", with series of triangles, etc.) similar to those employed with calendrical signs. The specific meaning of the different circular cartouches when they do not act as condensed versions of the "qualified" main signs is far from understood, also owing to the visual and conceptual overlapping between glyphic cartouches, mirrors, back ornaments and shields (Taube 1992, 2011: 103). A close and systematic inspection of the varying associations between circular frames and the glyphs they contain is a promising avenue for future research.

[13] Whittaker (pers. comm. 2021) has recently proposed that the obsidian knife could stand for **ITZ**, thus functioning as a phonetic indicator for *itzk*^{w}*intli*, 'dog'. However, as in the abovementioned case of the star-infixed coyote, I suspect that the "obsidian knife" sign may be a logographic qualifier rather than a phonetic indicator.

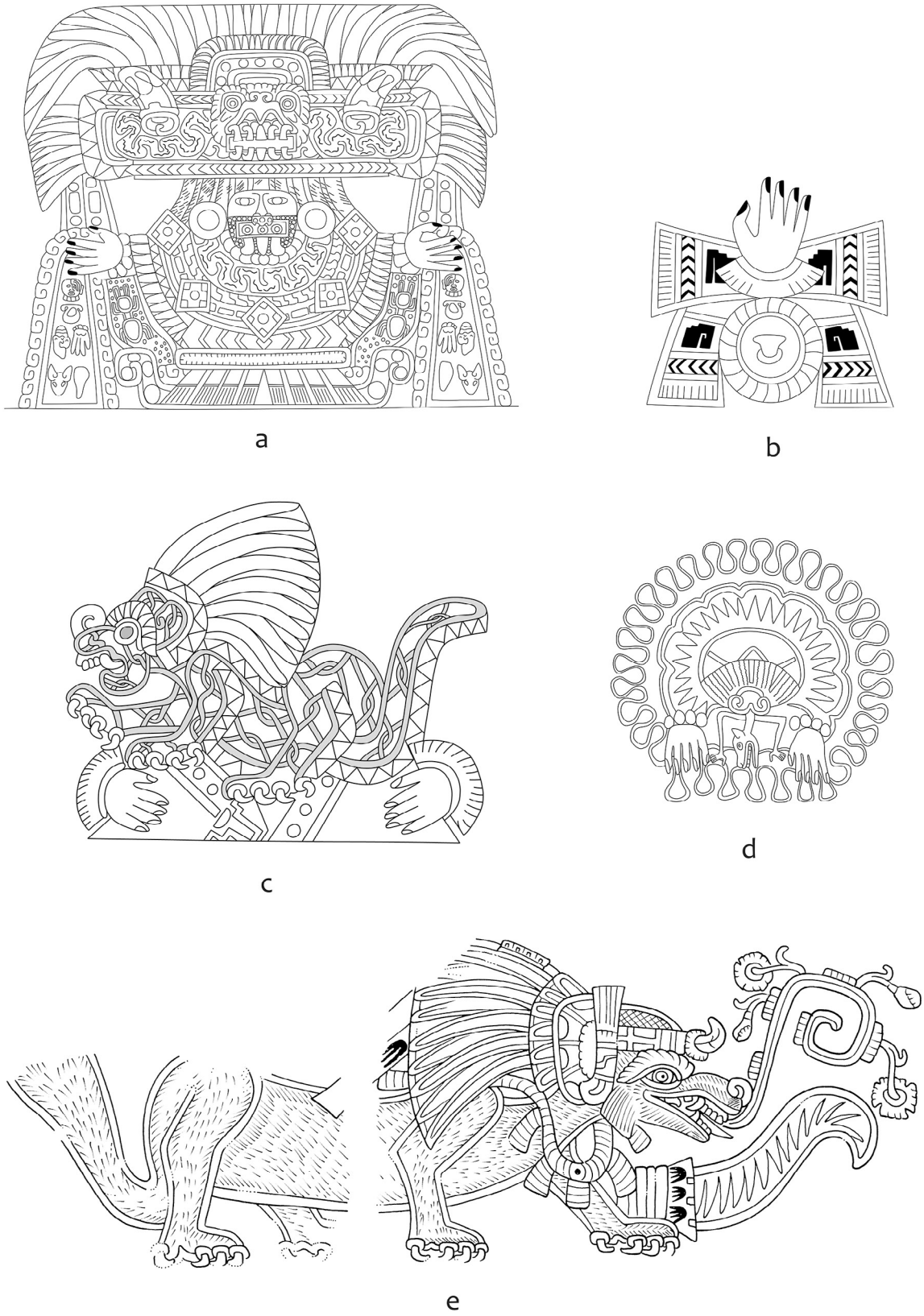

Figure 1.10: Examples of glyphic compounds.
a) Anthropomorphic glyphic compound from Tetitla, Portico 11 (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.5a). **b**) A glyphic compound by a hand, a mirror and embroided textiles from Tetitla, Room 1, Mural 1 (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.5c). **c)** A pair of hands frame an object, below a reticulated feline, Portico of the Jaguars, Portico 10, Mural 2 (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.1g). **d)** Scattering hands with other glyphic elements, Zona 5A, Room 18, Mural 1 (drawing by Elbis Domínguez, from Domenici 2017a: Fig. 3.5b).
e) An imposing obsidian knife affixed to a coyote (drawing by Christophe Helmke, after Berrin 1988: Fig. V.12).

Texts and images

We have seen that place names, personal names, titles and – to a lesser extent – calendrical notations are, by far, the most common signs so far recognized in the Teotihuacan scribal corpus, whereas verbs seem to be very rare. Paired with the paucity of linear texts, this suggests that the Teotihuacan writing system was mainly of an onomatographic kind such as those employed, say, in the Postclassic Mixtec and Nawatl-speaking worlds, where glyphic collocations usually provide names and dates of persons and events represented in the associated imagery. In these systems, meaning is the product of the strict interplay between images and texts, two distinct systems of graphic communication, which nonetheless share a series of visual resources such as the so-called property qualifiers or semantic determinatives. Precisely as it also happens in other areas of Mesoamerica (Stone and Zender 2011; Mikulska 2021), specific signs or surface patterns are employed in both imagery and writing to indicate the property of an element, often related with its materiality. For example, at Teotihuacan oval eyes mark shiny, wet, or brilliant surfaces; small strokes mark the coyote fur; a series of volutes marks foamy and cloudy bodies; a crenellated border marks watery bodies as waves, mountains or caves; a serrated pattern marks stony objects such as obsidian blades and mountains, etc.

Beside sharing several visual resources, texts and images are usually located in the same graphic space (Harris 1995). A common spatial relationship between texts and images is pairing, as in the case of the Techinantitla individuals flanked by small glyphic "captions" naming them (Figure 1.7a) or in other similar ones where glyphic compounds are much larger (e.g. Taube 2000: Figs. 8, 9a, 16b-c, 17 and 18). As already noticed by Taube (2000: 23), the glyphic compounds often include elements which also appear in the attire of individuals, arguably as badges of offices which would be thus expressed both in textual form and in what I elsewhere called the "vestmental register" of Teotihuacan visual corpus (Domenici 2017a: 61-62).

The individual and the qualifying glyphic compound may be conjoined in a single unit containing both glyphic and iconographic elements, as when glyphs are embedded within the individuals' garments and headdresses, as also occurs in Classic Maya and Mixtec iconography (Helmke and Nielsen 2014: 89-91; Domenici 2017a: 62; Nielsen and Helmke 2019) (Figure 1.7b and 1.11a). More commonly, a glyphic compound is seen at the base of a partial human figure, both in frontal and profile view. An example of the former is a vessel in the collection of the Los Angeles County Museum of Art, where the frontal image of a warrior is infixed by a star(fish) glyph (O'Neil 2017: Fig. 25.4).[14] On some instances, this compound also includes the shallow basin, which could imbue these with a toponymic value (O'Neil 2017: Fig. 25.3).[15] An especially interesting sub-category is the one wherein a frontal/profile torso of a richly attired individual rests on top of a "zoomorphic vehicle" (also rendered either frontally or in profile) infixed with various glyphs (von Winning 1987: I: Chap. 9: fig. 9; Taube 2011: 92-93; Conides 2018: Figs. 5.1-5.6, 6.29 and 6.30). Among them, it is possible to recognize the "hand + darts" compound (Caso 1966: fig. 39; Linné 2003: fig. 26; Stuart 2019, 2020; see also vessels linked in footnotes 9-11) (Figure 1.11c) or glyphs including elements of the individual's costume, as the butterfly nose ornament (Figure 1.11b).[16] A most interesting aspect of this specific pattern is that it seems to have been perceived by Classic Mesoamerican peoples as a distinctive Teotihuacano way of naming, since it appears in Teotihuacan-related imagery both in Zapotec Monte Albán (Stela 1) and on various Late Classic codex style Maya vessels from the *Kaanu'l* political sphere (Calakmul, La Corona) (e.g. Taube 2011: fig. 5.12; Looper and Polyukhovych 2018). As noticed by David Stuart (2013), on vessel K1647 the name of the *Kaanu'l* king *Yich'aak K'ahk'* is also written, in a Teotihuacan-like iconic manner, besides his profile portrait on top of the "zoomorphic vehicle". The latter probably records the title *Waxaklajuun Ubaah Chan*, "18 images of the snake", that is, the name of the so-called Teotihuacan War Serpent used by *Yich'aak K'ahk'* used as a military title (Salazar Lama *et al.* in press). Of outmost interest is the fact that a Teotihuacan ceramic fragment shows the "hand + darts" compound infixed in a serpent-butterfly which strongly recalls the "zoomorphic vehicle" seen on the *Kaanu'l* vessels (von Winning 1987: I: Chap. IXB: Fig. 5). This example suggests that "zoomorphic vehicles", instead of recording only individual names, could have also had a titular value.

Glyphic compounds are also embedded within large and complex iconographic compositions, as in the cases of plant-shaped toponyms from Tepantitla and Techinantitla or the series of mountains affixed with obsidian knives depicted (awkwardly, in an upside-down position) at Atetelco (Helmke *et al.* 2019: Fig. 16a). Even if the latter resembles at first sight a mimetic depiction of a desert, thorny landscape, it could well "hide" the name of an

[14] https://collections.lacma.org/node/179430 [accessed 19 June 2022]

[15] See for example the Los Angeles County Museum of Art vessel that seems to record a place name related with butterfly-bird warriors. https://collections.lacma.org/node/2237407 [accessed 19 June 2022]

[16] The same nose ornament, associated with similar "flower ropes", alternates with a headdress with butterfly nose ornaments and row of fangs on a remarkable vessel at the Los Angeles County Museum of Art, where the former could well record the title associated to the headdress. https://collections.lacma.org/node/1903421 [accessed 19 June 2022]

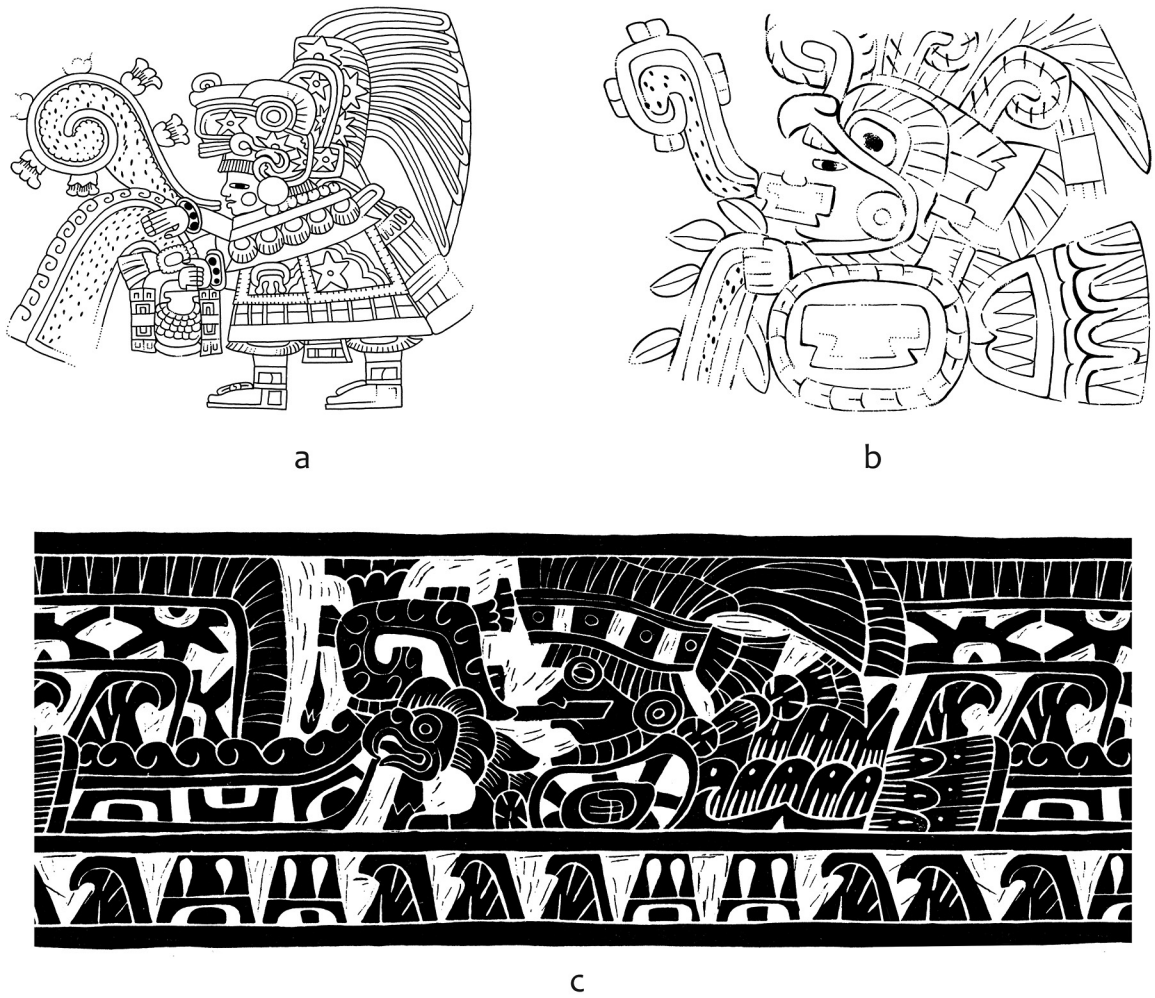

Figure 1.11: Text/image relationships.
a) The glyphs "star + water" and "Star(fish) Mountain" depicted on the garment of an individual depicted in the murals of Teopancazco (from Helmke and Nielsen 2014: Fig. 9a). **b)** An individual depicted in profile atop a zoomorphic vehicle with an infixed nose ornament in the shape of a butterfly that similar to the one worn by the individual himself. Detail of tripod vase in the Museo Anahuacalli (drawing by Christophe Helmke). **c)** Individual in profile atop a "bird + hands + darts" zoomorphic compound (from Caso 1966: Fig. 39b).

"Obsidian Mountain" range, maybe the one today known as Sierra de las Navajas, Hidalgo (Angulo 2008). Moreover, the bird-shaped glyphic compound depicted within three mountains could record the name of a specific peak (Nielsen and Helmke 2008). Glyphic compounds playfully embedded within larger iconographic compositions are also known from early colonial Nawatl documents such as the *Historia Tolteca-Chichimeca* (e.g. fol. 16r) or *Codex Telleriano-Remensis* (e.g. fol. 46).

Texts in Context: Teotihuacan writing as social practice

In order not to reduce the study of a writing system to a semiotic brain teaser detached from the socio-political contexts in which it was employed, it is useful to conclude this overview with an exploratory reflection on Teotihuacan writing as a social practice (Harris 1995; Urcid 2011). The fact that a large part of the extant Teotihuacan visual corpus consists of mural paintings is, in this sense, a unique opportunity, since the architectural spaces — the walls of which were entirely covered by visual discourses composed of both writing and iconography — would have functioned as performative contexts where texts and images were experienced by social actors, engaged in a variety of cultural practices. To restate the lexicon employed so far, we could think of mural paintings (and sculptural elements) as qualifiers attached to qualified built environments that functioned as meaning-laden performative sceneries.

A dominant discursive field of Teotihuacan visual corpus appears to have been the vestmental one, where

garments and headdresses were arguably employed as badges of specific political/religious offices somehow associated to the spaces where the vestmental discourse was also practically deployed through the appearance, public performance and rituals (e.g. headdress-taking ceremonies) carried out by lavishly attired individuals. Name glyphs — be these titles, anthroponyms or names of corporate social units — would have further specified the relationship between a certain space and the persons who acted within and upon it. The toponymic emphasis of the extant textual corpus suggests a variety of locative references. On the one hand, place names could communicate and reify the specific function of a space: the series of full-figure coyote-shaped toponyms on the *taludes* of Portico 1 in the White Patio of Atetelco, for example, would have made explicit — together with the related synthetic glyphs on the *cenefa* and the overlying images of coyote warriors — its association with a specific social unit, maybe a military order (see also Nielsen 2004). Similarly, the six heart-eating pumas repeated along the *taludes* of Tetitla Portico 13 would have qualified it as "The Place of the Bench of the Heart-Eater", that is, as the place where a powerful official or priest would have arguably engaged in hearings, offerings, gift exchanges and acts of conspicuous consumption. On the other hand, toponymic glyphs could have alluded to the territorial identity of corporate social units. The discovery of the mural paintings at El Rosario (Querétaro) (Nielsen *et al.* 2019a), for example, opened a fascinating window on how a place name ("Obsidian Mountain") could be linked to groups settled both in the city and in distant provincial settlements. Other recurrent toponyms such as the "Star(fish)/Shell Mountain" could have also alluded to similar socio-political formations, a name that may have been linked to a real or mythical place of origin. Similarly, notwithstanding its logographic or phonographic value, the "bent arm" glyph may well have recorded the ethnonym of a Classic precursor of the Postclassic *Akolwa* and of various related place names. In passing, I would note that — if such a strong continuity between Teotihuacan and Nawatl locative practices is entertained as a working hypothesis — the total absence at Teotihuacan of any "Bent Mountain" toponyms for <*Colhuacan*> is remarkable. Other place names may well have referred to otherworldly places such as the "Flower Mountain" (Taube 2004; 2006: 159) which is often associated to butterfly-marked individuals (Helmke and Nielsen 2014: Fig. 6g), maybe deceased warriors, and which could even be represented by the central figure of the famous mural painting of Tepantitla, where it constitutes the (toponymic?) focus of a lush and butterfly-laden landscape.

Far from constituting isolated bits of information, the textual/pictorial labels painted on walls formed larger discourses, the syntax of which must be sought within architectural syntax itself (or "spatial logic", see Robb 2007) of the spaces they qualified (Kubler 1973; Urcid 2011; Domenici 2017a).[17] Conceiving the whole Zacuala palace as unitary graphic space, I elsewhere argued that its pictorial apparatus constitutes a political tableau that communicates an order of offices and places, an "architectural map" of a house-like socio-political unit (Domenici 2017a: 63-69; 2018). Interestingly enough, the spatial logic of such a map strongly recalls the early colonial *Mapa Quinatzin*, where the spatial arrangement of the Texcoco royal palace and subordinated localities constitutes a political scheme of the Late Postclassic kingdom of Texcoco. Despite the obvious differences, the painted spaces of Zacuala and the painted *amate* sheet of the *Mapa Quinatzin* suggest a conceptual continuity, a similar way of conveying political information by means of a specific pictorial and textual genre. However, the strict political meaning of the locative emphasis seen in Teotihuacan must be understood in a nuanced way, since Teotihuacan toponyms seem to have also recorded the names of mythistorical or otherworldly places. The abovementioned Postclassic case of the "Bent Mountain" is a good example of the complex and nuanced ways in which political identities can be related with a mythistorical place.

Undoubtedly, élite compounds like Zacuala, Tetitla, Atetelco, Tepantitla or Techinantitla were the theatres of ceremonial activities such as feasts, hearings, gifts exchanges and offerings to gods and ancestors, often accompanied by dances, music and chants. Political and religious hierarchies would thus have been experienced spatially and sensorially by social actors through a close interplay between the painted/written architectural settings and the actions that took place within them. Even without imagining a one-to-one correspondence between painted scenes and actual practices, walls bearing depictions of scattering rituals, processions involving the display of codices (Zone 3; Helmke and Nielsen 2021: 34; Nielsen *et al.* 2021: 261, Fig. 14d), feasts (Atetelco North Patio, Mural 7, South-East Patio), drinking and libations of *pulque* (Tetitla Pinturas Realistas and La Ventilla Conjunto Jaguares; Nielsen and Helmke 2017b) and even sacred narratives such as the "Demise of the Great Celestial Bird" (Zone 5A; Nielsen and Helmke 2015) provide us with a glimpse of the diversity of such interplays. Many of these must have also involved the use and manipulation of text-bearing objects such as the tripod vessels qualified by images of high-ranking individuals (maybe including dead warriors/ancestors) and by the glyphic tags recording their names and titles. Conceived as inalienable objects, they may have been used and exchanged as tokens of political relationships of alliance, clientele, patronage,

[17] A similar idea was expressed by Kubler (1972: 75) when he wrote about a "liturgical continuity". More recently, Susan Toby Evans (2016) has written about Teotihuacan's processional spaces.

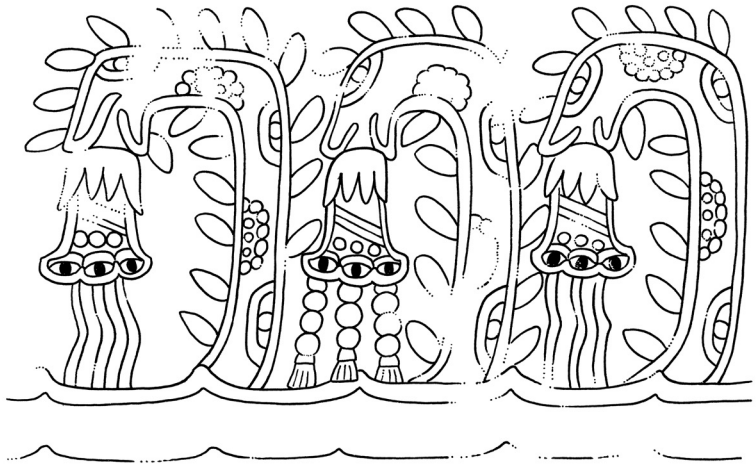

Figure 1.12: Dew-emitting, red and yellow bent flowers depicted along the doorway of Portico 2 at Tepantitla (drawing by Christophe Helmke).

etc., as also occurred in other Mesoamerican regions (e.g. Reents-Budet 1994; Urcid 2011: 134; Pohl 1998).

An intriguing example of the interaction between painted architectural settings and the performances these could have hosted comes from Tepantitla Portico 2, whose *cenefas* are decorated by a series of alternating red and yellow flowers, bent under the weight of leaking, precious (i.e. jewel-like) dew (Figure 1.12). The images can be compared with the Nawatl Christian prayer to Saint Claire recorded in Bernardino de Sahagún's *Psalmodia Christiana*, the same one which contains the reference to the "Red Bone Flower" noted by Cowgill (1992) in a path-breaking essay which first called our attention to the similarity between Postclassic Nawatl chants and the complex textual/pictorial scenes of the kind known in the murals of Tepantitla, Techinantitla and Atetelco (see also Nielsen 2014). A section of the prayer states: <*tlapaliuisuchitl, teucuitlasuchitl*, *vncan tlaçomauizuiuitoliuhtoc, quetzal-laoachuitoliuhtoc*>, "the red flowers, the golden flowers, preciously and marvellously there they bend, soaked of precious dew they bend" (Anderson 1993: 238; translation mine). The similarity between the painted images and the alphabetically written text is evident, not only in terms of semantic content but also in their alternating, parallel structure. Moreover, both the Colonial prayer and the Tepantitla mural paintings display a strong locative emphasis, being focused on the celebration of a sacred greening mountain. At the very least, these analogies reveal a striking continuity between the information visually recorded in the paintings of Tepantitla (interpreted as an antecedent of the Postclassic *cuicacalli*, 'House of Songs', by Jennifer Browder 2005) and the Late Postclassic-Early Colonial song genre known as *xopancuicatl*, 'Springtime Song' (Domenici 2017b, 2022). Needless to say, this is not to naively suggest that the painted walls of Tepantitla were actually "read" but, rather, that they would have constituted a meaningful architectural scenery for choreutic events where images and texts would have evoked key symbolism that was socially experienced as part of complex multi-sensorial performances.

Conclusion

The decipherment of the Teotihuacan writing system still has a long way to go, having to face major obstacles such as our ignorance of the main Teotihuacan language and the apparently scarce use of phonograms. Still, semantic decipherments and intercultural comparisons are providing solid bases for future progresses. Day names, toponyms, anthroponyms, titles and names of buildings have been identified as components of a mostly onomatographic writing system whose full meaning emerged from its complex and ingenious interplay with iconography. Jointly used, texts and images conveyed information about spatialized political/religious orders. They also transformed architectural spaces into meaning-laden performative contexts where those orders were enacted and negotiated through a variety of cultural practices.

Beyond all this, one of the most important results so far attained has been to firmly inscribe Teotihuacan writing practices within (or, to a great extent, at the origin of) a multi-secular Central Mexican writing tradition which — through the creative mediation of the Epiclassic and Early Postclassic scripts employed in places like Xochicalco, Cacaxtla and Tula — led to the Nawatl writing system in use in the Late Postclassic and early Colonial periods. Thanks to the recognition

of this multi-secular genealogy of scripts, images and associated socio-political practices, marked by both continuities and ruptures, Teotihuacan now looks much less anomalous, but no less unique.

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Chapter 2:
The Writing System of Western Oaxaca: The Ñuiñe Style in a Regional Context

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The northwest of Oaxaca, the southeast of Puebla and northeast of Guerrero is the landscape that witnessed the confluence of different writing traditions, most notably those of Central Mexico, and the regions of Oaxaca and Guerrero. Inhabited since Precolumbian times by diverse linguistic groups, mostly of the Otomanguean language family, and especially by the Mixtec, this has been an area of intense cultural exchange between central and southeastern Mexico (Figure 2.1). As such, the Mixtec region is located between two important political and social centres, the one focused on the Valley of Oaxaca, inhabited by the Zapotec, and the other on Central Mexico with its large urban centres, such as Teotihuacan and Cholula during the Classic and Xochicalco and others in the Epiclassic.

Background

The Ñuiñe writing system was identified by John Paddock (1966), who documented sixteen carved monuments in the vicinity of Huajuapan de León, Oaxaca and who noted the similarities of their glyphs to the iconography of Teotihuacan as well as the calendrical system of the Zapotec of Monte Albán. Thereafter, in the monograph of Christopher Moser (1977) the known corpus was systematised to 44 examples, and offered a reconstruction of the calendar, as well as a list of all the known glyphs inscribed on the monuments. Laura Rodríguez Cano (1996) greatly expanded the register of carved monuments in her catalogue, containing 132 examples, documented in the states of Oaxaca and Puebla. The corpus initiated by Moser provided a comprehensive catalogue of 142 Ñuiñe signs and motifs (Moser 1977: 121), whereas that of Rodríguez Cano reduced the number to only 44 compositions (Rodríguez Cano 1996: Appendix). I consider the Moser catalogue to be much more exhaustive, as it includes features found in ceramic effigy vessels, which can also be identified in the stone monuments, something that has been corroborated by recent finds.

The case studies undertaken by Urcid (1996, 1998, 2001 and 2011) and the author (Rivera Guzmán 2000, 2008a, 2008b) have suggested that a pattern exists in Ñuiñe representations and writing and they have emphasized the contextual analyses of monuments within frameworks of monumental and funerary architecture. In the explorations that we have undertaken at various archaeological sites in the region, we have seen that there is a close relationship between the location of the monuments with inscriptions, and the mounds and platforms that together define major plazas.

Initially it was thought that Ñuiñe writing was only found in the Mixteca Baja region of Oaxaca, around Huajuapan de León, San Pedro y San Pablo Tequixtepec, and Santiago Chazumba (Moser 1977). Regional archaeological reconnaissance projects have now revealed that monuments with Ñuiñe inscriptions are found beyond the Mixteca Baja, to the east (Rivera Guzmán 2008a), and into the states of Puebla and Guerrero to the West (Rodríguez Cano and Rosas Salinas 2015; Rosas Salinas 2016). An important number of monuments is concentrated at archaeological sites of the Mixteca Baja, but this abundant record is partly due to the use of the volcanic stone – basalt – that is less liable to erosion and thereby favours good preservation through the centuries. In contrast, in the neighbouring region of the Mixteca Alta, the use of limestone is more commonplace, and as a result the monuments are also more susceptible to erosion and destruction over time. In the carved monuments we can observe glyphs paired with numerals that correspond to named days in the 260-day ritual calendar, as well as place name glyphs, involving the glyph for a stylized hill. These elements indicate that Ñuiñe inscriptions are testimonies about time and space, issues of paramount importance to the ancient inhabitants of the region. Well-preserved and complete monuments exhibited in the museums of Mexico and elsewhere, as well as fragments documented during comprehensive surveys, demonstrate the regular and frequent use of the calendar throughout the region.

The discovery of tombs with painted murals at San Juan Ixcaquixtla, in the southeast of Puebla (Rivera Guzmán 2008c), Jaltepetongo in the Mixteca Alta (Matadamas 2001, 2005; Urcid 2008) and most recently in San Pedro

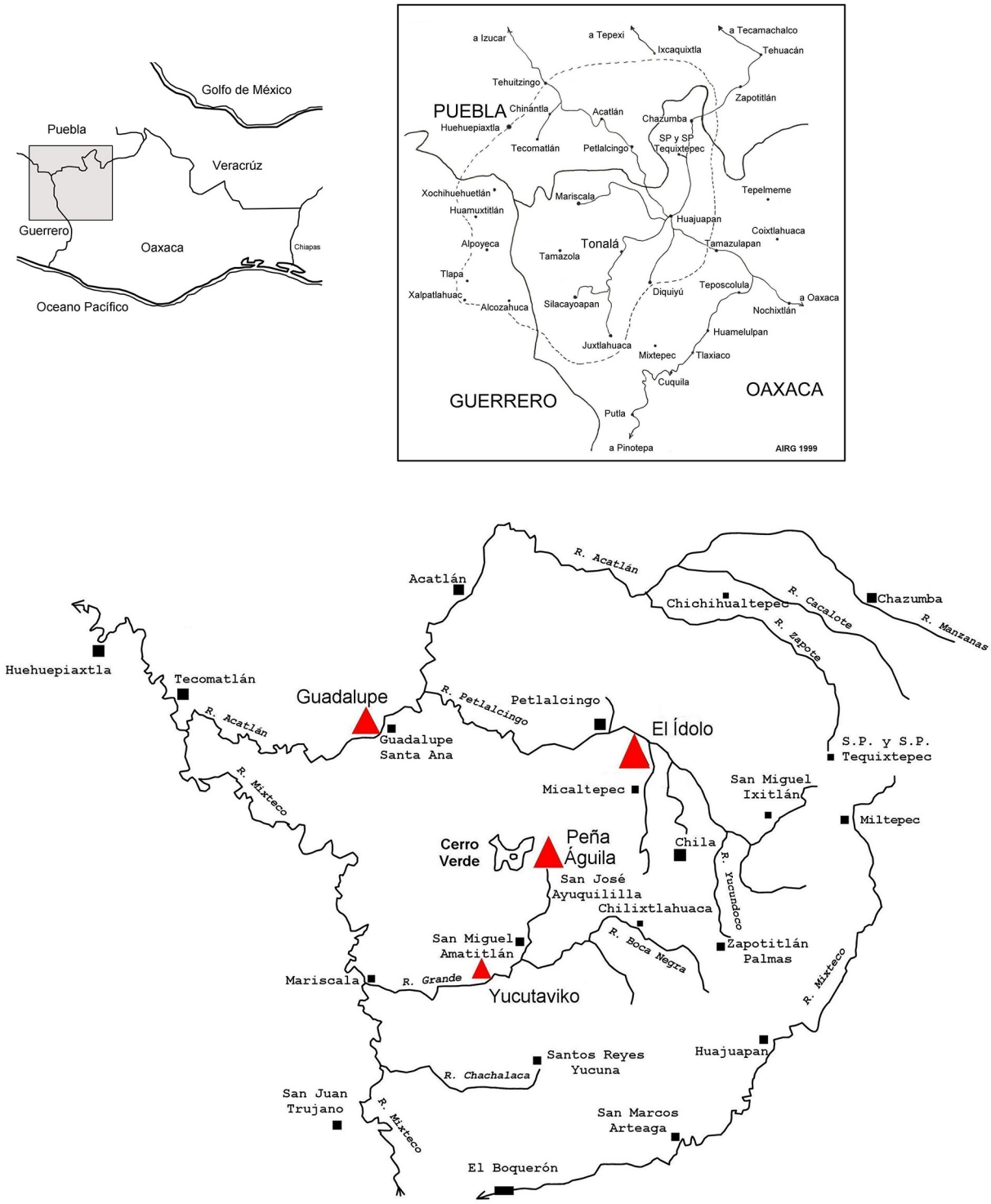


Figure 2.1: Map of the Mixteca region showing the rivers and communities mentioned in the text (this and all figures by the author, unless otherwise indicated).

Tillo[1], Nochixtlan, show that epigraphic records, in addition to carving, were also painted for posterity. These spaces were consecrated to the ancestors, to their worship and to the evocation of founding narratives. In addition, there are calendrical features on effigy vessels, the so-called "urns" deposited within the tombs. Portable objects, minor sculpture, bone and shell artefacts also present calendrical glyphs. Some of these may record the name of the person who owned and/or used a given object, such as the Tepelmeme conch shell (Rivera Guzmán and Malbrán Porto 2006).

Chronology

Both Paddock (1966) as well as Winter (1994) place the Ñuiñe style in the Classic period. The first, based on the style of the monuments and comparisons to other archaeological materials, suggesting that these can be dated to the Late Classic. The second, based on archaeological excavations at the site of Cerro de las Minas, Huajuapan and other salvage excavations, corroborating its assignment to the Classic period (AD 400-800). Nonetheless, to date there are only two published radiocarbon dates pertaining to the Ñuiñe style and in both cases these fall squarely within the Early Classic, considerably earlier than previous assignments.[2] This apparent incongruence is largely due to the fact that many monuments have been reused or have been found outside of their primary context, making it difficult to obtain a reliable dating. Given the scant archaeometric data, we continue to date much of the Ñuiñe materials based on relative assessments of their style.

As precedents, there are inscriptions in the Mixteca that can be dated back to the Late Preclassic period (400-200 BC). For instance, the carved monuments of the Huamelulpan site, in the Mixteca Alta, exhibit calendrical glyphs paired with numerals written with both bars and dots (Gaxiola 1984) (Figure 2.2). The style of these monuments closely resembles Zapotec inscriptions of the Oaxaca Valley of the Monte Albán II, or Nisa phase (Winter 1994). In Huamelulpan the carvings embellish the corners of the platforms and structures, and as we will see, this is a recurrent pattern at many sites in the Mixteca until the Late Classic. The cave paintings of the Puente Colosal at Tepelmeme are other examples of the early Ñuiñe style (Figure 2.3 & 2.4). The latter were painted in a large format on the uneven and rocky wall surfaces of a huge underground passage and dating to a range of time periods, from the Late Preclassic to the Late Postclassic. Rincón-Mautner (1995, 2005) and Urcid (2005) have proposed that the main painted group is a linear text that includes calendrical glyphs, and that these relate the names of characters, including a toponym, possibly the very name of the place. Most of these paintings were realised during the Late Classic, and in Urcid's opinion, correspond to the genealogical records in which at least three generations might be enumerated (Urcid 2005). A recent visit to the Colossal Bridge has enabled the analysis of images in the Dstretch programme, corroborating the presence of features noted by Rincón-Mautner and Urcid, such as the painted grid in the area of the main group, that resembles the grid pattern painted on the floor of the Patio de los Glifos in the La Ventilla area of Teotihuacan (Nielsen and Helmke 2011). Further analyses of this group are still on-going.

As such, the Ñuiñe style has its antecedents in the Late Formative period and begins to manifest itself in earnest in the Early Classic. A relevant aspect, in my opinion, is the intrusion, or at least appearance of Teotihuacan in the Mixteca during this period. The archaeology of the region attests to a change in settlement patterns, as well as in mortuary practices and the manufacture of ceramics. These archaeological features indicate that in the Late Preclassic, there was a shared affiliation between the Mixteca and the centre of Oaxaca, but by AD 300 there was a notable change. Other indicators, such as the appearance of Teotihuacan-style monuments are found at Oaxaca's coastal sites (Rivera Guzmán 2011) and at sites in Guerrero (Nielsen *et al.* 2019), and the appearance of related evidence in the Valley of Oaxaca, especially at Monte Albán (Winter 1998), are all equally noteworthy. The imagery of Teotihuacan greatly influenced local iconographic features in the Mixteca, that continued in use in the region for centuries. A notable example, as we will see, is the presence of the "year glyph" drawn from Teotihuacan antecedants and used in the Mixteca even after the collapse of the great metropolis.

Most examples of Ñuiñe inscriptions date to the Late Classic. These are found on stone monuments, sculptures, ceramic objects and portable artefacts, which have been recorded and the subject of detailed analyses. The number of Ñuiñe objects and monuments recorded to date amounts to 223 examples, but less than half of these represent calendrical notations. The abundance of this material and its distribution indicates that there was a great deal of activity among the scribes of the region during the Late Classic.

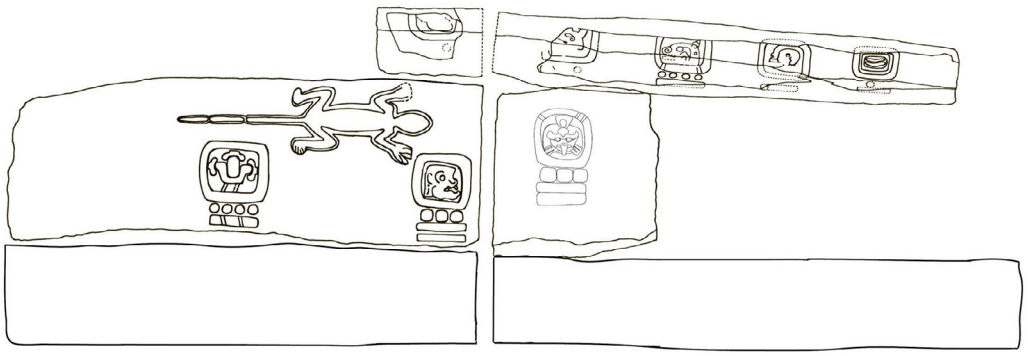
Calendrical Notations

For the reconstruction of the calendar used during the Classic period, several proposals have been presented, with lists of calendrical glyphs presented by Moser (1977), Rodríguez Cano (1996), Urcid (2005) and Rivera

[1] The contents of the tomb, the painted and engraved texts found within, are being analysed by the team of Dr. Marcus Winter, of the Instituto Nacional de Antropología e Historia, Oaxaca.

[2] One ceramic specimen – an effigy vessel – indicates that the style existed as early as AD 390 (Winter 2002: 81).

a



b

c

Figure 2.2: Carved cornerstones of Huamelulpan.
a) Corner of Platform C at Huamelulpan (photograph by Román Piña Chan, taken in 1972). **b)** Drawing of the corner of Platform C at Huamelulpan (after Gaxiola 1984, with modifications). **c)** Stone engraved with the figure of a lizard (75cm long) at the Museo Comunitario Hitalulu.

Figure 2.3: The main group of painting at the Puente Colosal, Tepelmeme, Oaxaca. Above the unaltered photograph, below processed in the programme Dstrech.

Figure 2.4: Detail of the main group at the Puente Colosal, processed in the programme Dstrech.

Guzmán (2008b). The list presented here (Table 2.1) shows the most updated sequence of glyphs naming the 20 days of the 260-day calendar.[3] As can be observed, the iconography of the individual signs is similar in several cases to that used in the Zapotec writing system, which is why it seems tenable to suggest that the Ñuiñe system is derived from the former. However, we can likewise notice that several glyphs appear closer in resemblance to those in use in the Central Mexican highlands, such as 'House', which is found in late Ñuiñe monuments (dated to AD 600–800), and which replace, or at the very least correspond, to the third position in the Oaxacan calendar, namely 'Owl' (Jansen and Winter 1980; Rivera Guzmán 2015). There are also discontinuities with the representation of some glyphs; for example the glyph "Knot" or "Glyph A" appears on several late Ñuiñe monuments and disappears from the Postclassic calendar, as does Glyph Ñ. Both the 'House' glyph and "Glyph A" glyph are common in their representation in the monuments of the Epiclassic period of Central Mexico (see Helmke and Nielsen, this volume). In contrast, other glyphs such as 'Lizard' and "Glyph V" do not exhibit changes in their representation and incidence over the centures (Figure 2.5 & 2.6). A notable absence in the Ñuiñe corpus is the so-called "Reptile Eye" glyph (see Helmke and Nielsen 2011: 11-12, 15-20, this volume). This glyph is found the eastern region of Guerrero and in some sites of the Oaxacan coast (Urcid 1993, 2012), but so far it has not been documented in the Mixteca.[4] Nor has it been documented in the corpus of central Oaxaca and the central valleys, suggesting that another glyph was used in its place, and that the corresponding day was called something else in the region.

In some cases, human hands emerge from calendrical glyphs that indicate actions, so these may represent historical characters, as named human beings. Most of these inscriptions are found concentrated between Huajuapan and San Pedro y San Pablo Tequixtepec (Figure 2.7). The hands and arms was a convention that was also used in Epiclassic writing as attested in the texts of Xochicalco and Cacaxtla (Caso 1967; Helmke and Nielsen 2011; Helmke *et al.* 2019; Helmke and Nielsen, this volume).

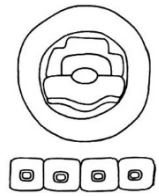
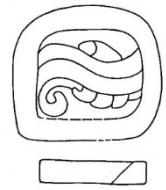
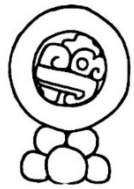
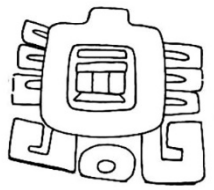
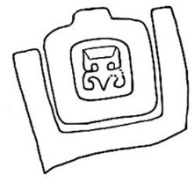
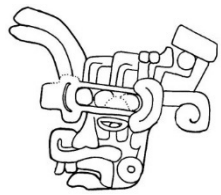
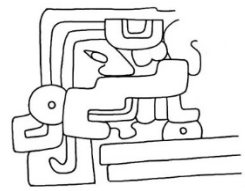
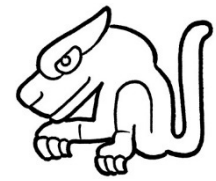
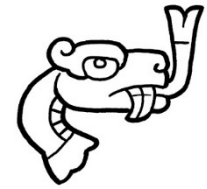
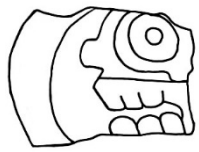
One of the most recurrent glyphs in the corpus serves as a temporal marker (Figure 2.8). The earliest appareance of this glyph occurs on one of the funerary panels of Tomb 1 of Yucuñudahui, in the Mixteca Alta (Caso 1938).[5] This glyph shows an early version of "Glyph D", or 'Reed'. As Nielsen and Helmke (2019) have pointed out, the year notation involves a prominent headdress, taken from the material culture of Teotihuacan, which here in its scribal form, draws on the aesthetics and iconographic conventions of the same culture. Topping a calendrical sign with this headdress marks it as a

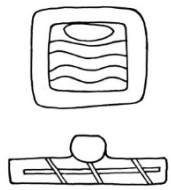
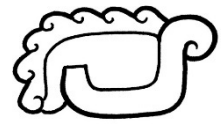
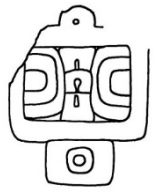
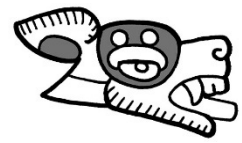
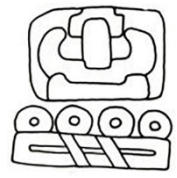
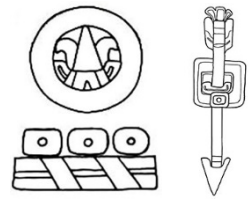
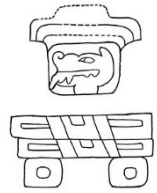
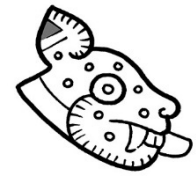
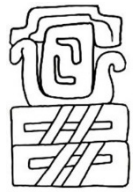
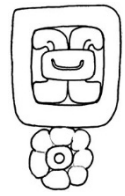
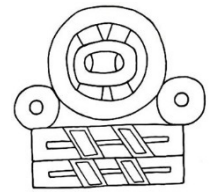
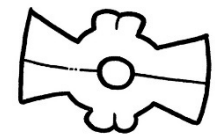
[3] The letters used here correspond to the nomenclature devised by Caso (1928) and updated by Urcid (2001).

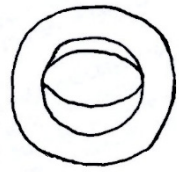
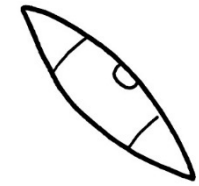
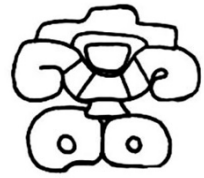
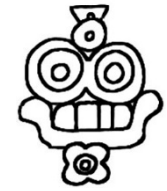
[4] Moser identified the "Reptile Eye" glyph in Monument 21 of Tequixtepec (Moser 1977:74). Likewise, Rodríguez Cano identified the glyph in two additional monuments (Rodríguez Cano 2013:125). Nonetheless, these clearly correspond to "Glyph V" for 'Lizard'.

[5] A radiocarbon date of one of the ceiling beams could be dated to around 320 BC (Drennan 1983).

Table 2.1: Tabulation of the day glyphs used in the Mixteca during the Classic and Late Classic periods (drawings by Ángel Iván Rivera Guzmán) and comparisons with the ones used in the Postclassic (*Codex Vindobonensis*; drawings by Christophe Helmke).

Glyphs	Classic Period	Late Classic	Late Postclassic
'Crocodile' (Glyph V)			
'Lightning' (Glyph M)			
'House' / 'Owl' (Glyph R/F)			
--- (Glyph Ñ)			
'Snake' (Glyph S)			
'Death' (Glyph H)		—	
'Deer' (Glyph G)			
'Rabbit'	—	—	

Glyphs	Classic Period	Late Classic	Late Postclassic
'Water' (Glyph Z)		—	
"Knot" / 'Dog' (Glyph A)			
'Monkey' (Glyph O)			
'Grass' (Glyph N)			
'Reed' (Glyph D)			
'Jaguar' (Glyph B)			
'Maize cob' / 'Eagle' (Glyph J)		—	
'Eye' (Glyph L)			
'Earthquake' (Glyph E)			

Glyphs	Classic Period	Late Classic	Late Postclassic
'Flint' (Glyph Q)		—	
'Rain' (Glyph C)			
'Lord' / 'Flower' (Glyph)	—		

year notation, distinguished from named days that are written without the headdress. In the Mixteca, this glyph was used on different funerary panels and stelae, serving to denote year-bearers for two different calendrical sequences. For example, on Lápida 1 from Cerro de las Minas, San Miguel Tlacotepec, the headdress was placed over Glyph M, which in Oaxaca occupies the second position in the 20-day sequence and is part of the year-bearer set used in Oaxaca since the Preclassic: 'Lightning', 'Deer', 'Grass', and 'Earthquake' (Urcid 2001). In contrast, on a stela found in the vicinity of Guadalupe, Acatlan, Puebla (von Winning 1979), the headdress is placed atop the glyph for 'House', which corresponds to another set of year-bearers, that used in Central Mexico ('House', 'Rabbit', 'Reed' and 'Flint'). As already remarked, both 'House' and 'Owl' correspond to the same position in the calendrical sequence, which is why panels featuring the 'Owl' glyph can also be topped by the headdress. Thus, two systems of year-bearers appear to have co-existed in the Mixteca (Figure 2.9) (Rodríguez Cano 1996; Urcid 1998), with perhaps the older (Preclassic and Early Classic) deriving from the Oaxacan tradition, whereas the later (Late Classic) probably stems from the traditions of Central Mexico.

Themes of the Inscriptions

The context of the inscriptions reveals a variety of themes. In funerary contexts, within tombs, carved panels made of limestone (measuring on average 40cm high by 30cm wide) exhibit a systematic pattern: At the base is a particular version of "Glyph U" (Urcid 1996, 2001), at the top of it there is a calendrical glyph and on it, a diadem or headdress, sometimes with the glyph of the year, but in other cases a diadem or headband (Figure 2.10). Due to their placement within tombs, we surmise that these represent the calendrical name of the person who was laid to rest there, or possibly the main ancestor of the family (Winter 1994). The sign known as "Glyph U" also appears as a base in non-calendrical contexts, especially on ceramic effigy vessels, with the representations of particular deities (Figure 2.11). Both funerary panels and effigy vessels are frequently found inside tombs, so it is possible that "Glyph U" is related to the mortuary environment and to deified ancestors (Urcid 1996, 2011).

On large blocks of basalt, found at the Cerro de la Caja, in the vicinity of San Pedro y San Pablo Tequixtepec, scenes of conquest are shown, with dejected characters and toponyms. Monument 7, for instance, at Cerro de la Caja records the glyph '6 Jaguar' – the name of a ruler of the site – subduing a character with an object similar to a baton. The conquered person is represented on a hill glyph, within which is a depiction of lightning, in the style of Oaxacan iconography. This then, must be the name of the locality that was conquered by Lord '6 Jaguar' and is presumably a site in proximity to Cerro de la Caja (Figure 2.12). The same lord appears named on another block, but there he is devouring another character (Rivera Guzmán 2000). As such, these monuments together form representational programmes, designed to commemorate the inauguration of rulers, as well as their salient conquests, leaving little doubt that these are historical records of great importance to the communities where these were found.

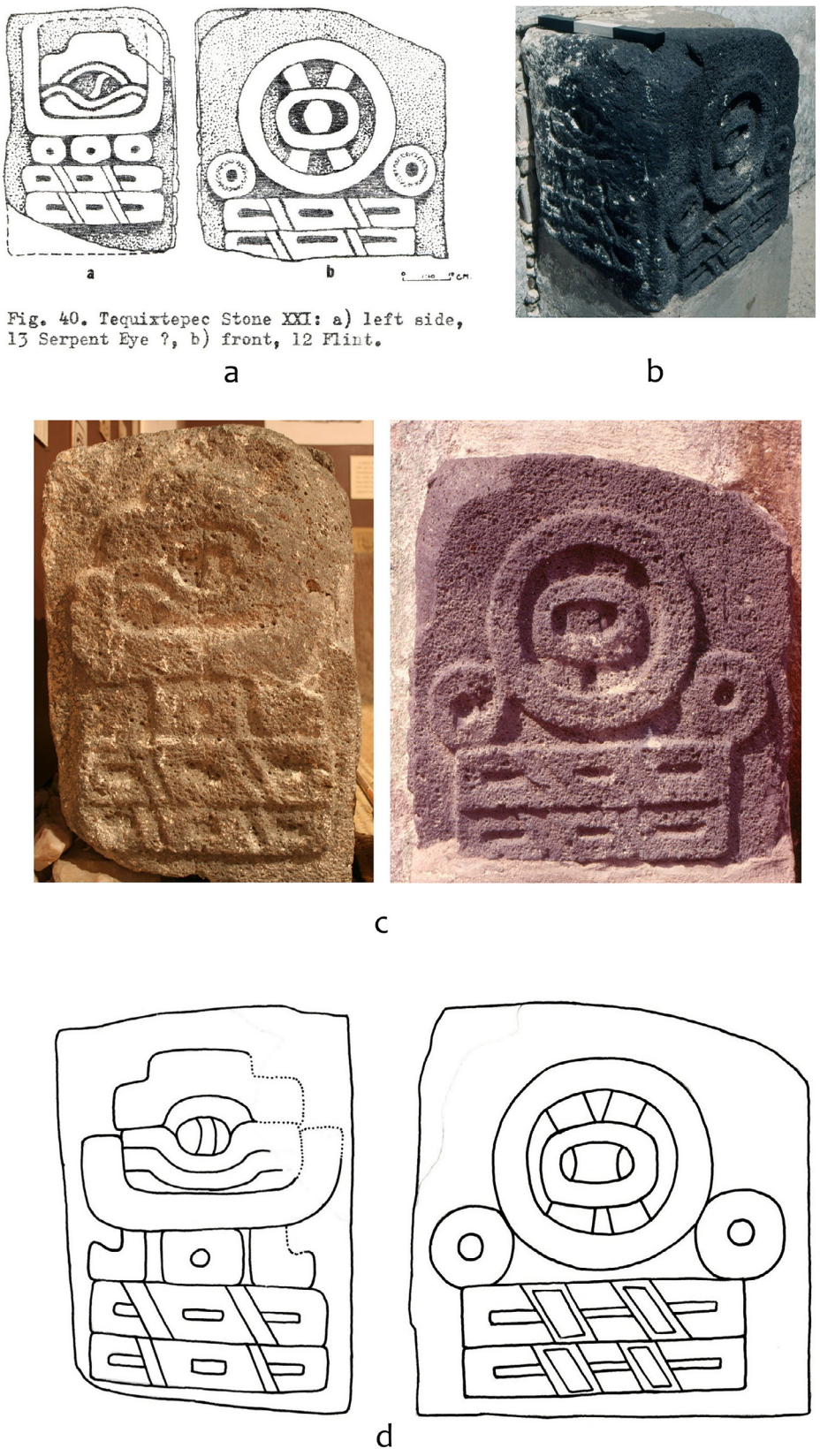


Figure 2.5: Monument 21 of San Pedro y San Pablo Tequixtepec, Oaxaca.
a) Drawing by Moser 1977: Fig. 40. **b)** Photograph of the cornerstone. **c)** Current state of the monument.
d) Drawing of the monument.

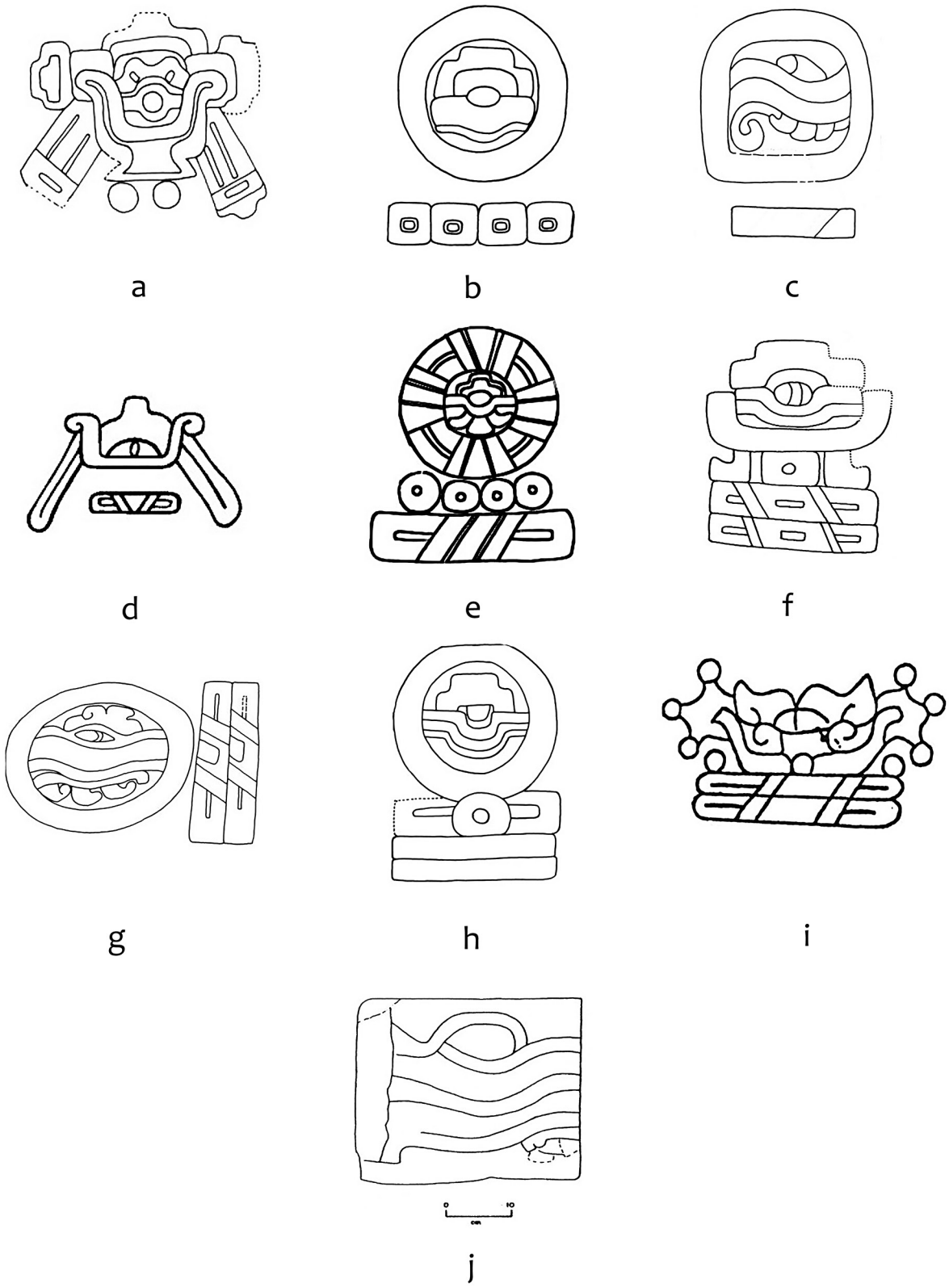


Figure 2.6: "Glyph V" ('Crocodile') in the calendar and iconography of the Mixteca.
a) Stone of San Pedro y San Pablo Tequixtepec, MUREH. Glyph: '2 Crocodile'. **b)** Stone 32 of San Pedro y San Pablo Tequixtepec, MCMY. Glyph: '4 Crocodile'. **c)** Stone 1 of Cerro Siempre Viva, Suchitepec. Glyph: '5 Crocodile'. **d)** Painting of the Puente Colosal. Glyph: '5 Crocodile' (drawing courtesy of Javier Urcid). **e)** Stone 11 of San Pedro y San Pablo Tequixtepec. Glyph: '9 Crocodile'. **f)** Stone 21 of San Pedro y San Pablo Tequixtepec. Glyph: '11 Crocodile'. **g)** Stone 3 of Cerro de la Caja, San Pedro y San Pablo Tequixtepec. Glyph: '10 Crocodile'. **h)** Stone 1 of Acatlan, Puebla. Museo comunitario Senen Mexic. Glyph: '11 Crocodile'. **i)** Tripod bowl from Añañe, Museo Nacional de Antropología. Glyph: '13 Crocodile'. **j)** Stone found in Plaza 2 of Cerro de las Minas, Huajuapan (adapted from Winter 1991:19).

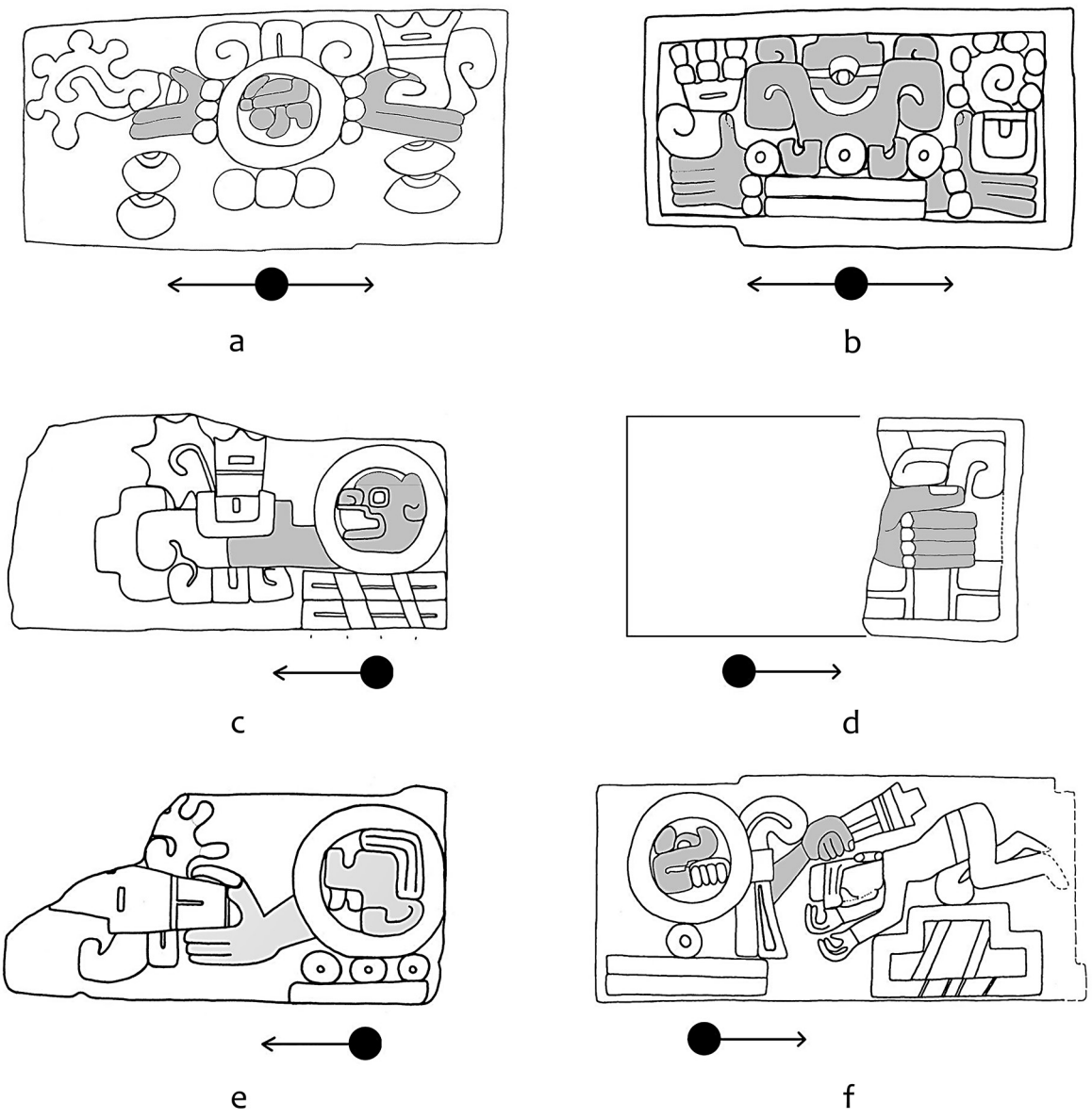


Figure 2.7: Orientation and directionality of texts in Ñuiñe inscripciones.
a) Monument 10 of Cerro de la Caja, San Pedro y San Pablo Tequixtepec. Glyph: '3 Lightning' (3 M). Monolithic cornerstone *in situ*, south corner of Plataform P. **b)** Stone 2 of Chinango. Glyph: '13 Crocodile' (13 V). Embedded into the belfry of the local church. **c)** Stone of Cerro de la Flecha, Miltepec. Glyph: '10 Jaguar' (10 B). Embedded in the curial house of the local parish. **d)** The stone of Huapanapan. Fragment of a large block that must have had a calendrical glyph (drawing based on a photograph in Paddock 1966: Fig. 211). **e)** Stone of Suchitepec. Glyph: "8 Ñ". Municipal Palace. **f)** Stone 1 of San Pedro y San Pablo Tequixtepec. Glyph: '11 Jaguar' (11 M). Flagpole in the local municipal square.

There are also commemorative monuments that record the founding of communities and the investiture of rulers, generally found on large carved blocks, forming the base of Late Classic platforms. These narrative programmes begin with a calendrical glyph, recording the name of a given year, and a place name glyph, which typically shows stairs, representing the combination of a built platform and a hill, together denoting the community at large. Relevant examples are known for Cerro Levantado, Huapanapan as well as San Pedro y San Pablo Tequixtepec, two important but distant archaeological sites (Rivera Guzmán 1999). In both cases the same calendrical date appears, the year '9 Reed' (Figure 2.13). This calendrical date also corresponds to the name of an important female deity in the Mixteca, one especially linked to the communities of the Mixteca Baja, notably in Tonala and Huajuapan. The Goddess 9 Reed also appears in the Postclassic

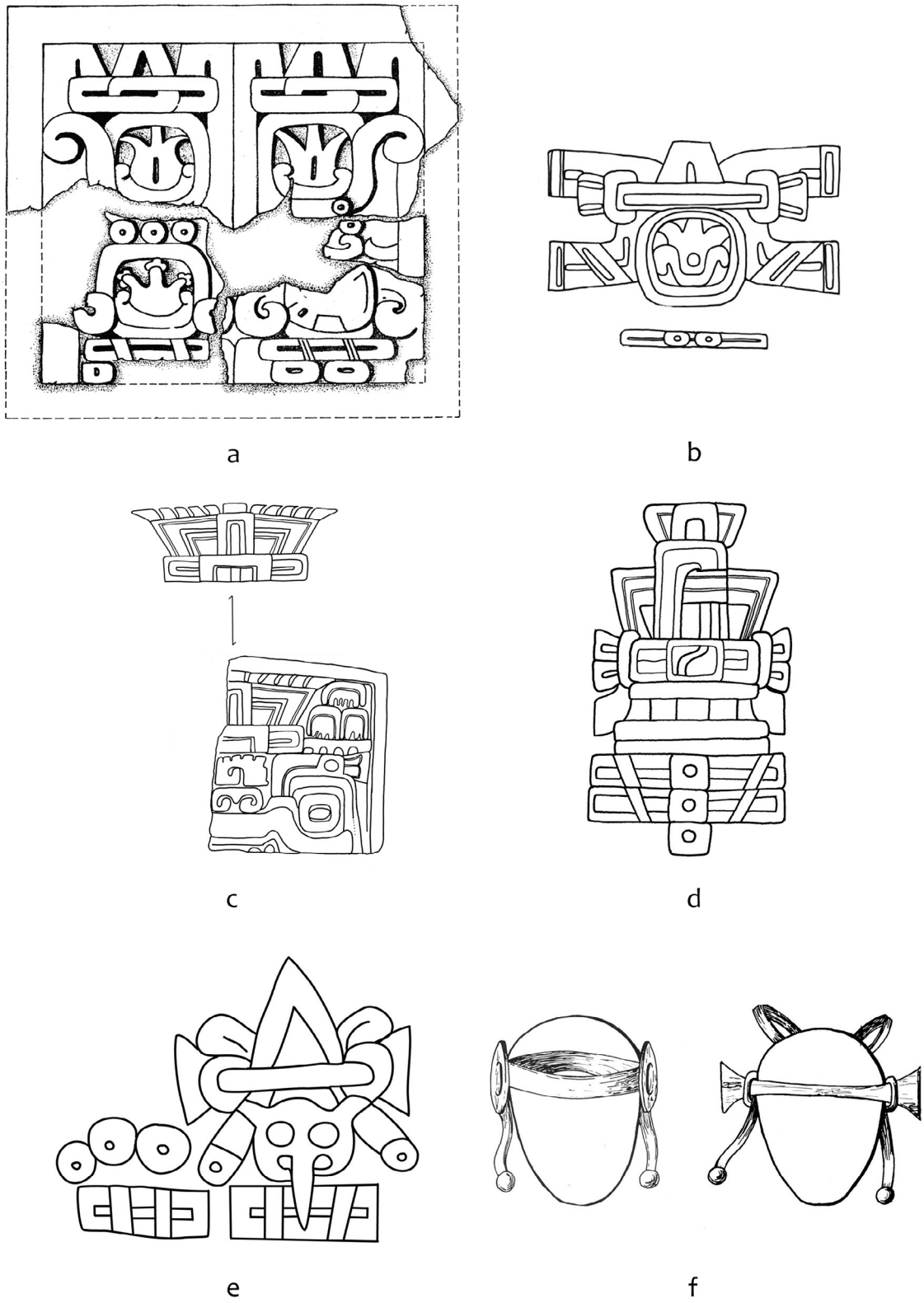


Figure 2.8: Examples of the year glyph used in the Mixteca.
a) Tomb of Yucuñudahui (Caso 1938). Glyphs: '3 Reed' and '2? Reed'. Early Classic. **b)** Monument 1 of Cerro Camotlan, Oaxaca. Glyph: '7 Reed'. Late Classic. **c)** Panel 1 of Cerro Minas, San Miguel Tlacotepec, Oaxaca and a reconstruction of the headdress. Glyph: "? M". **d)** Stela 1 found in the vicinity of Guadalupe, Acatlan, Puebla. Glyph: '13 House'. Late Classic. **e)** Panel of Cerro del Cacique, Tilantongo. Glyph: '13 Owl'. Late Classic. **f)** Interpretation of the headdress of the previous panel (after Jansen and Winter 1980: Fig. 6).

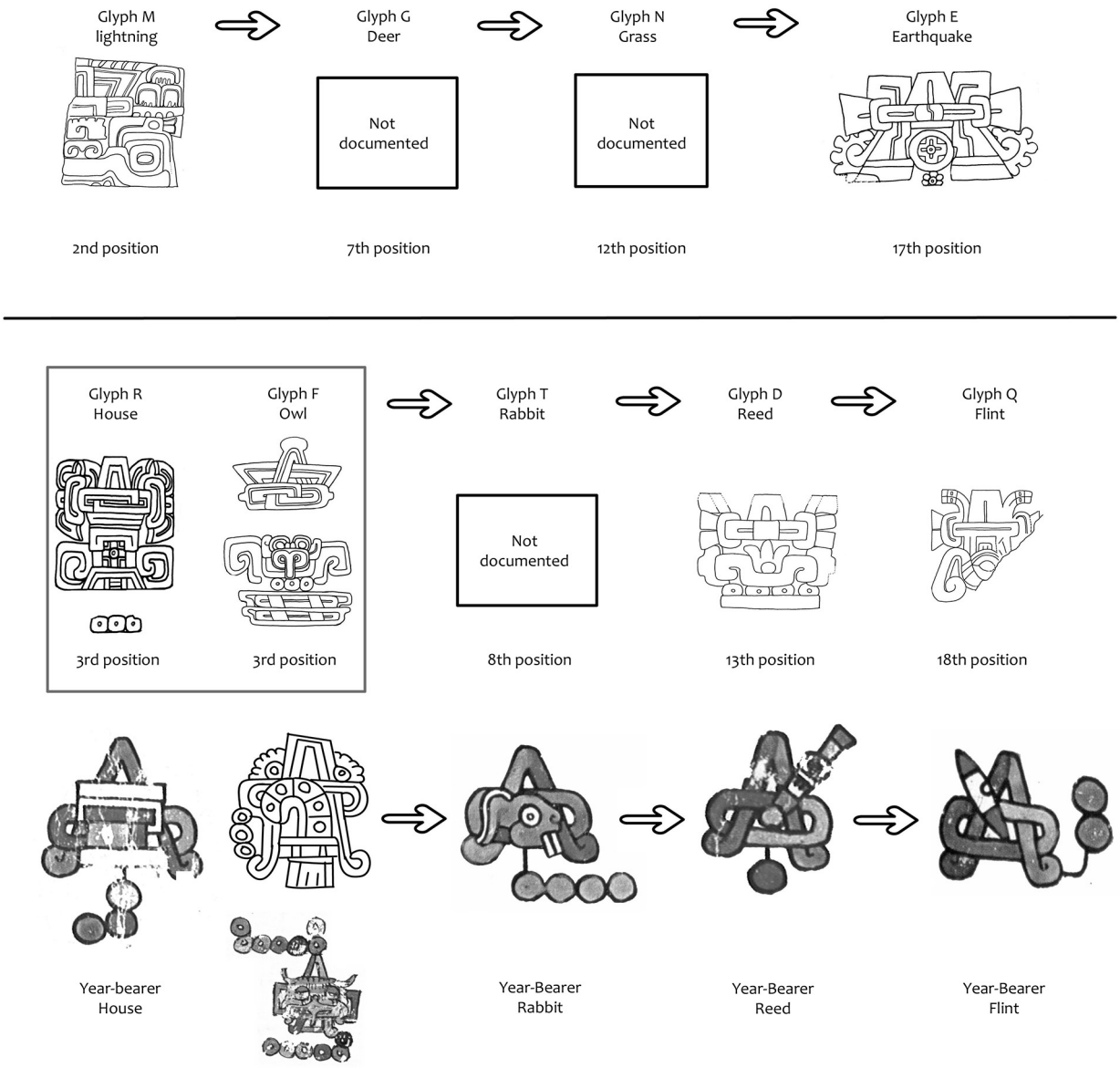


Figure 2.9: The year glyph in the Mixteca Baja and the sequence of year-bearers used: The earliest at the top and the most recent at the bottom.

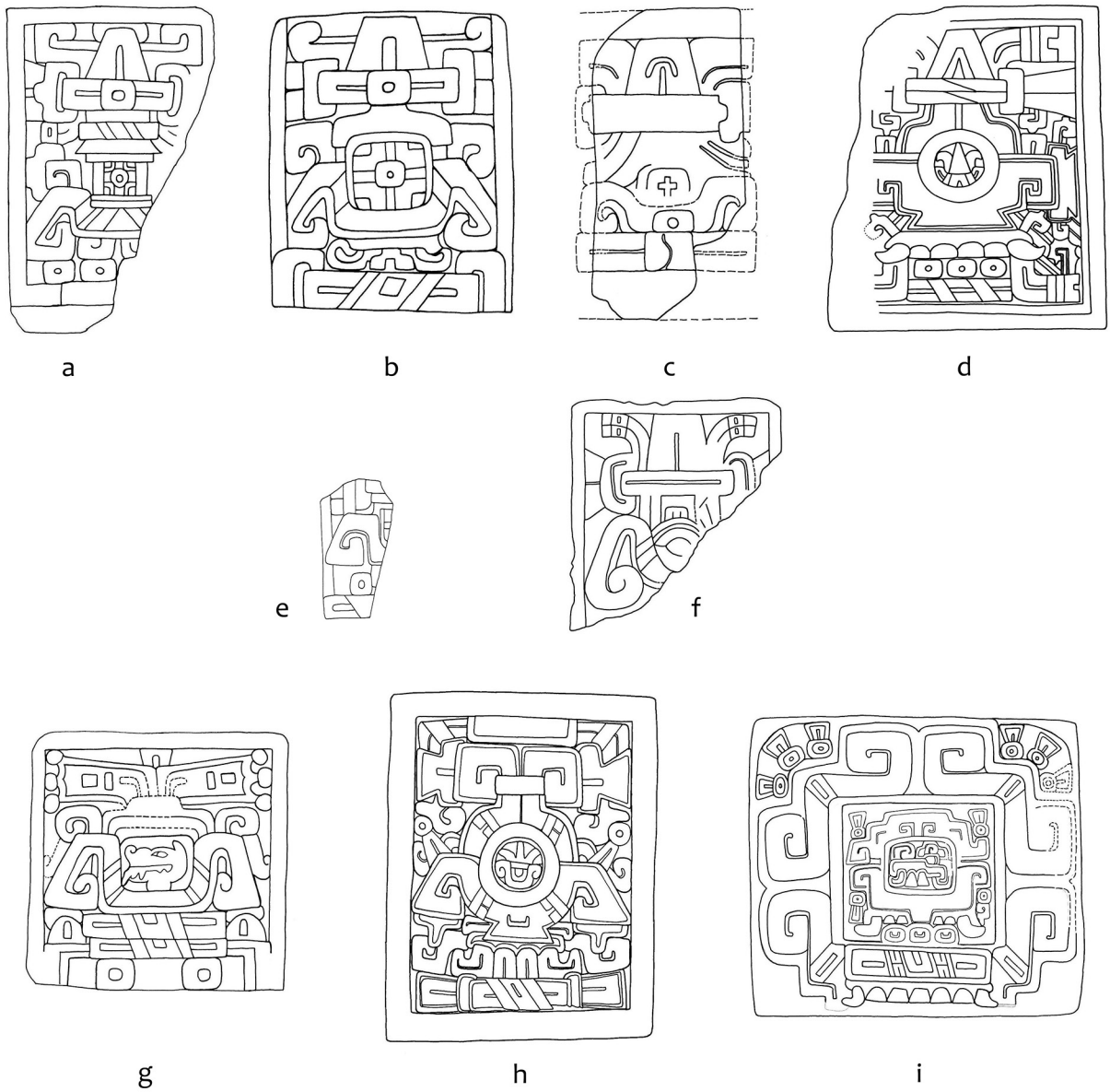
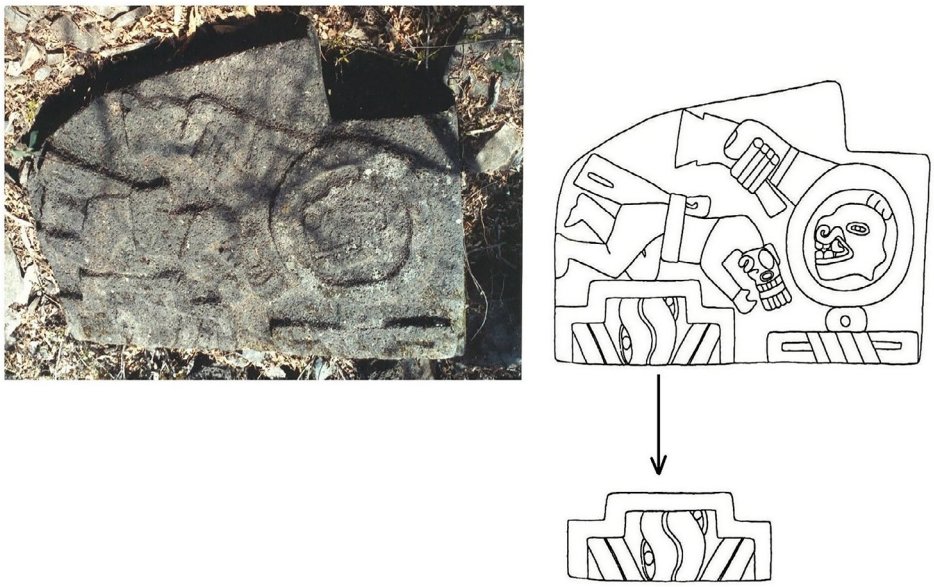


Figure 2.10: Ñuiñe limestone panels that use "Glyph U" as their base.
a) Panel 1 of Tomb 5 at Cerro de las Minas, Huajuapan. Museo Regional de Huajuapan. **b)** Panel 2 of Tomb 5 at Cerro de las Minas, Huajuapan. Museo Regional de Huajuapan. **c)** Panel 2 of Ñuucuiñe, Museo Comunitario de Cuquila, Mixteca Alta, Oaxaca. **d)** Loma Teba, Tonala, Oaxaca. **e)** Panel 3 of Ñuucuiñe, Museo Comunitario de Cuquila, Mixteca Alta, Oaxaca. **f)** Panel 1 of Chilixtlahuaca. Museo Regional de Huajuapan, Oaxaca. **g)** Panel of Tomb 3 of Cerro de las Minas, Huajuapan. Bodega del Museo de las Culturas de Oaxaca. **h)** Museo Frisell de Arte Prehispánico, Oaxaca. **i)** Ethnographic Museum of Berlin. Provenance attributed to Tepeaca, Puebla.

codices as a bearer of arrows and flints, denoting this as a decidedly martial deity (Rivera Guzmán *et al.* 2016) (Figure 2.14). At Tequixtepec, the narrative begins at the corner of a structure, where the initial panel relates the rise to power of the Lord '9 Knot' represented in the guise of a jaguar wearing a feathered headdress, while climbing a hill in glyphic form. In one of its paws, the feline holds a hill glyph, a symbol of the community. The carved stones must have been incorporated into a structure or platform where this and related events were remembered and acts of community consecration carried out. In fact, there are isolated monuments, shaped in the form of the hill glyph, which could have formed part of the structure's furnishings, where enthronement ceremonies took place. In San Miguel Ixitlan, Puebla, not far from Tequixtepec, there is a monument placed within the municipal garden, here designated as Monument 1. Stunningly, the carving is rendered in the shape of a hill, with the frontal depiction of the head of an owl embedded within. The scrolls on either side of the bird's head perhaps represent the cries or screech of the owl. Lacking numerals, this is

Figure 2.11: "Glyph U" used as part of Ñuiñe effigy vessels.



a

b

Figure 2.12: Conquest scene on Monument 7 of Cerro de la Caja, San Pedro y San Pablo Tequixtepec, Oaxaca and a comparable scene in the *Lienzo de Suchitepec* (Oaxaca), dated to the 16th century (Ethnographic Department, National Museum, Copenhagen).

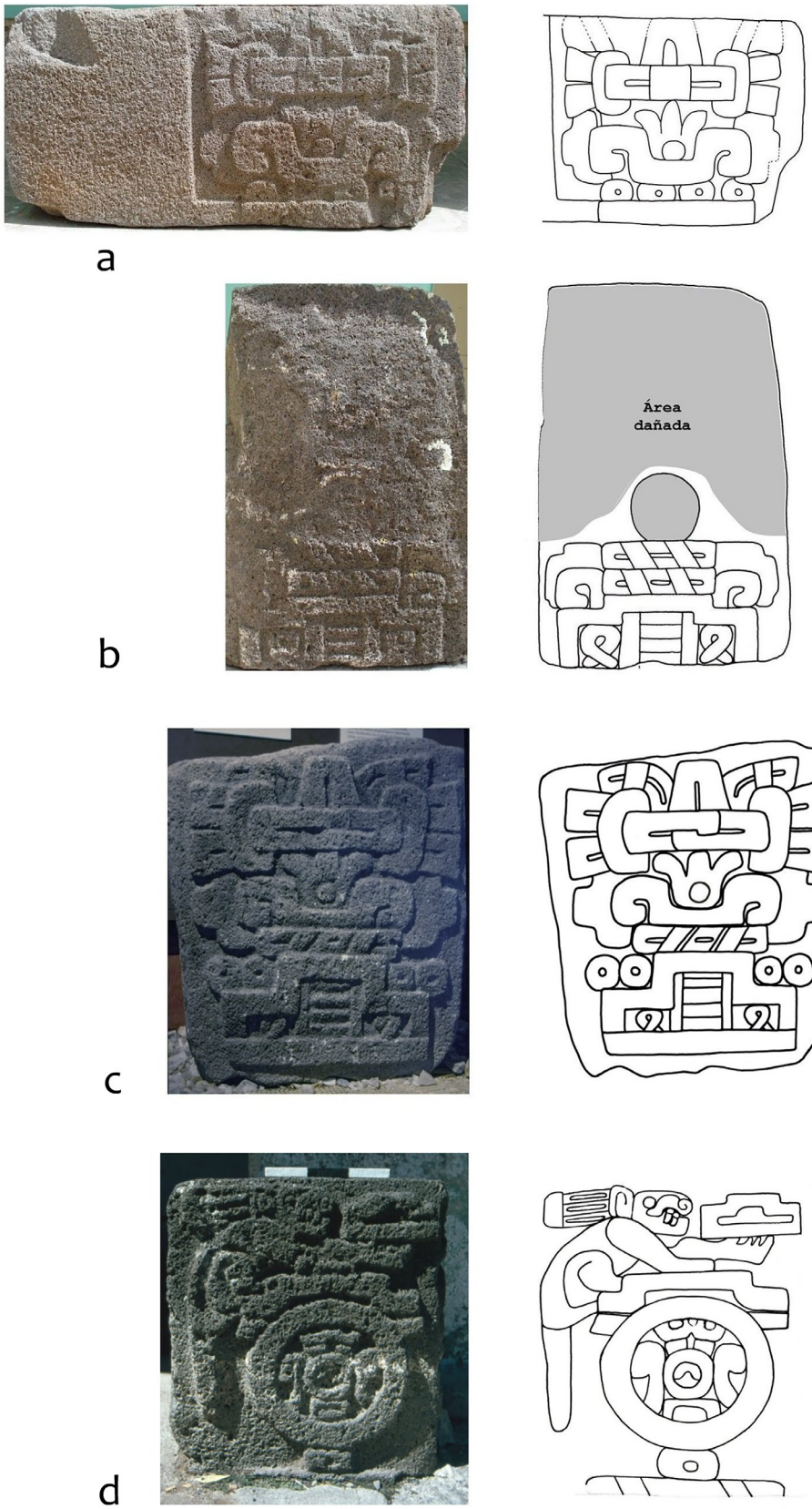


Figure 2.13: Ñuiñe cornerstones with calendrical glyphs.
a) Monument 2 of Cerro Levantado, Huapanapan, Oaxaca. **b)** Monument 1 of Cerro Levantado, Huapanapan, Oaxaca. Eroded section rendered in grey shading. **c)** Monument 5 of San Pedro y San Pablo Tequixtepec, Museo Comunitario local, Oaxaca. **d)** Monument 17 of San Pedro y San Pablo Tequixtepec, Museo Comunitario local, Oaxaca.

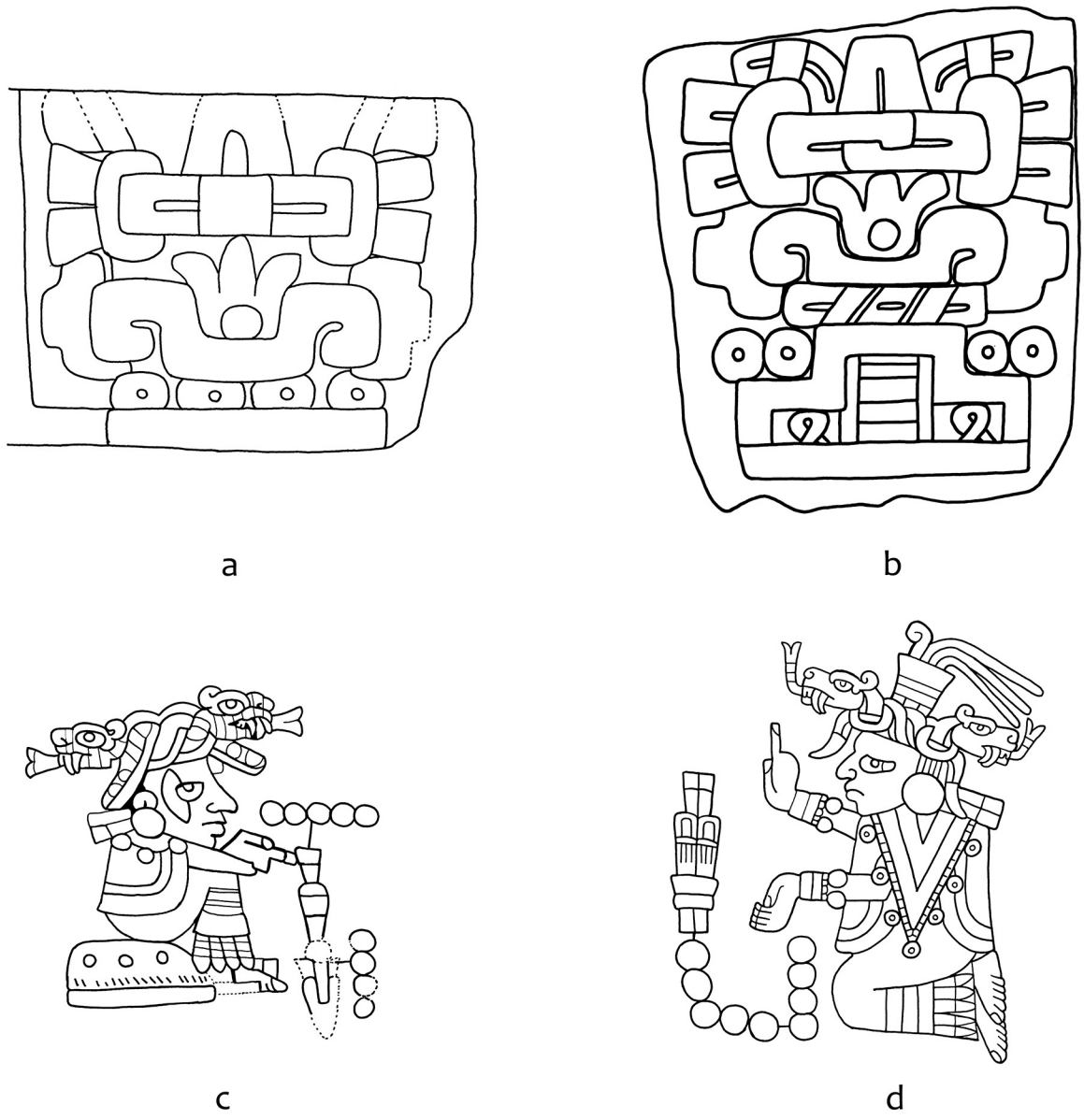


Figure 2:14: Ñuiñe monuments with the year-bearer '9 Reed' and the goddess '9 Reed' in Postclassic Mixtec manuscripts. **a)** Monument of Cerro del Sombrerito, Huapanapan, Oaxaca. **b)** Monument 5 of San Pedro y San Pablo Tequixtepec, Oaxaca. **c)** Lady '9 Reed', *Codex Bodley*. **d)** Lady '9 Reed', *Codex Vindobonensis*.

unlikely to be a calendrical notation and instead must name a community as the 'Hill of the Owl' (Figure 2.15).[6] In another case, in the painted scenes that adorn the walls of Tomb 1 at Jaltepetongo, we can see the profile of a hill glyph, represented in serpentine form. Atop of this personified mountain is what appears to be a ritual specialist, wearing the mask of the Rain God (*Dzahui*), overseeing the enthronement rituals of a seated lord whose name is embedded in his headdress, namely "Glyph J" or 'Maize' (Figure 2.16). According to Urcid (2008) the complete scene narrates a passage from a creation narrative, where the protagonists travel through different mythical places. The themes recall the mythological passages at the beginning of the Postclassic documents from the Mixteca, as in the case of the Egerton Codex (attributed to Cuyotepeji) that narrate the pilgrimages of dynastic founders to various localities, prior to the foundation of their kingdoms (Jansen 1994).

Mary Elizabeth Smith discovered that certain calendrical dates in the Mixtec codices of the Postclassic were especially important and pertain to the founding of dynasties and communities (Smith and Parmenter 1991: 25-28). In her study of the *Codex Tulane*

[6] Rodríguez Cano and Rosas Salinas (2015) have proprosed the identification of this place as the Barranca del Tecolote, by Ixitlan.

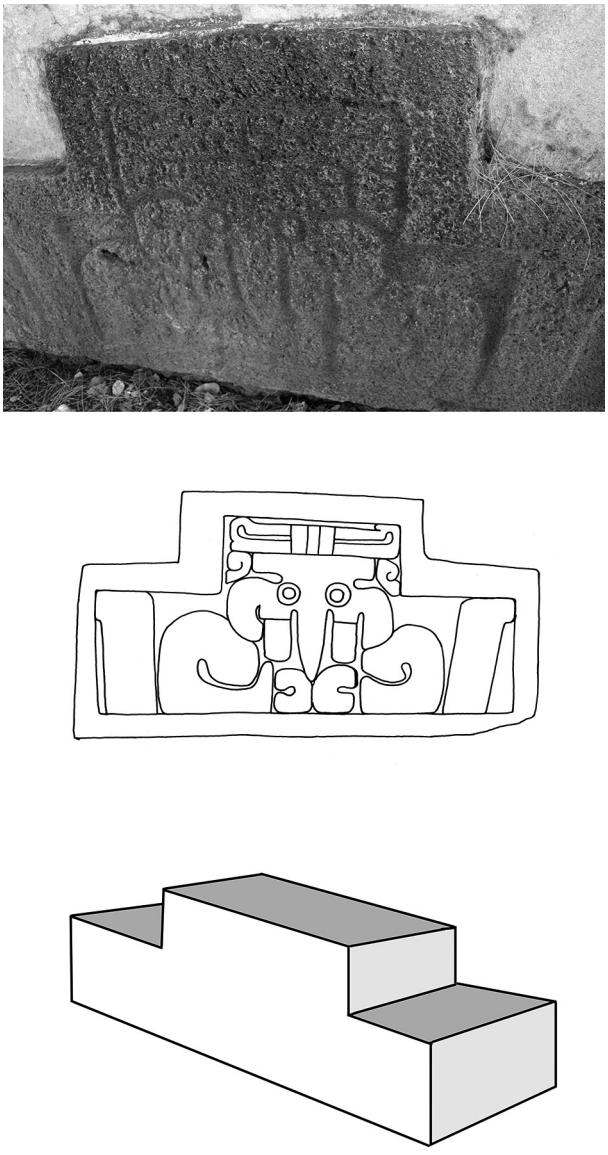


Figure 2.15: Monument 1 of San Miguel Ixitlan, Puebla. **a)** Current condition of the monument. **b)** Drawing of the carved surface. **c)** Reconstruction of the block (1.25m wide by 66cm high).

(*Codex Huamelulpan*), which deals with the dynasty of the Acatlan in Puebla, she noted that a couple of the dates at the beginning of the genealogical section correspond to the names of particular deities. These dates are '9 Eagle' and '7 Deer', which in addition to their temporal function also serve as calendrical names. The importance of these names/dates is reified by their repetition on page 4a of the *Codex Vindobonensis* (Figure 2.17). She also noted that the initial date of the Tulane Codex, the day '9 Movement' of the year '6 Reed', likewise appears in the *Codex Vindobonensis* and corresponds to the calendrical names of the deity '9 Movement'. Other repetitive canonical dates can be found in the documents of the Mixteca and are related to the mythological foundation of communities and kingdoms (Jansen 1988: 166).

Although these codices date to the Late Postclassic, the rituals described within constitute a canon of religious observances, which possibly had been celebrated in the region for a long time. Based on these observations, I think that some of the Ñuiñe monuments, especially the monolithic cornerstones, were used as inscriptions commemorating the mythical founding of local dynasties. This reasoning would link the written tradition of the Late Classic to that of the Postclassic, which although these exhibit different æsthetics and paleographic features, nonetheless share themes in common.

Discussion: Language and Ñuiñe Writing?

The discoverer of Ñuiñe writing, Paddock, had serious doubts that the style was the work of Mixtec speakers, since he considered that there was no evidence for these speakers in the Mixteca Baja before the Postclassic. In contrast, Moser proposed that the Ñuiñe system could be a forerunner or prototype of Mixtec writing. Archaeological finds and studies, as well as glottochronological studies, provide yet other scenarios. The wider region where the Ñuiñe script is found, included, in the 16th century, Mixtec, Ngigua (Chocho-Popoloca) and Trique-speaking peoples. By glottochronological studies, it is considered plausible that the Mixteca region was inhabited by Mixtec speakers since the Preclassic (Hopkins 1984).

Urcid considers that the Ñuiñe writing system is logo-phonetic and is one of five writing traditions of south-western Mesoamerica, which include: 1) the Zapotec tradition (the most documented and well-known), 2) the coastal tradition on the border of the State of Guerrero, 3) the Chiapas tradition, in the southern part of the Isthmus of Tehuantepec and the Pacific Coast, 4) the post-scriptural tradition of Monte Albán dated to between the 9th and 11th centuries, and 5) the late Oaxacan writing tradition that lasted into the Postclassic in the region (Urcid 2011, 2012).

The diversity of languages in the region makes it feasible to think that all of these languages used the Ñuiñe writing system, making the calendrical glyphs and toponyms legible in each of the respective languages, Likewise, this linguistic overlap may explain the differences seen in the calendrical glyphs, perhaps reflecting differing traditions and languages. If so, it is possible that a common system of communication was used throughout this region since the Classic period, something that would be repeated once more with the appearance of the Mixteca-Puebla style in the Postclassic.

Figure 2.16: The scene in Tomb 1 at Jaltepetongo.
Top, photograph of the central section (photograph © Ricardo Alvarado, courtesy of the Archivo Fotográfico "Manuel Toussaint", Instituto de Investigaciones Estéticas, UNAM); bottom, drawing of the same (drawing by Christophe Helmke).

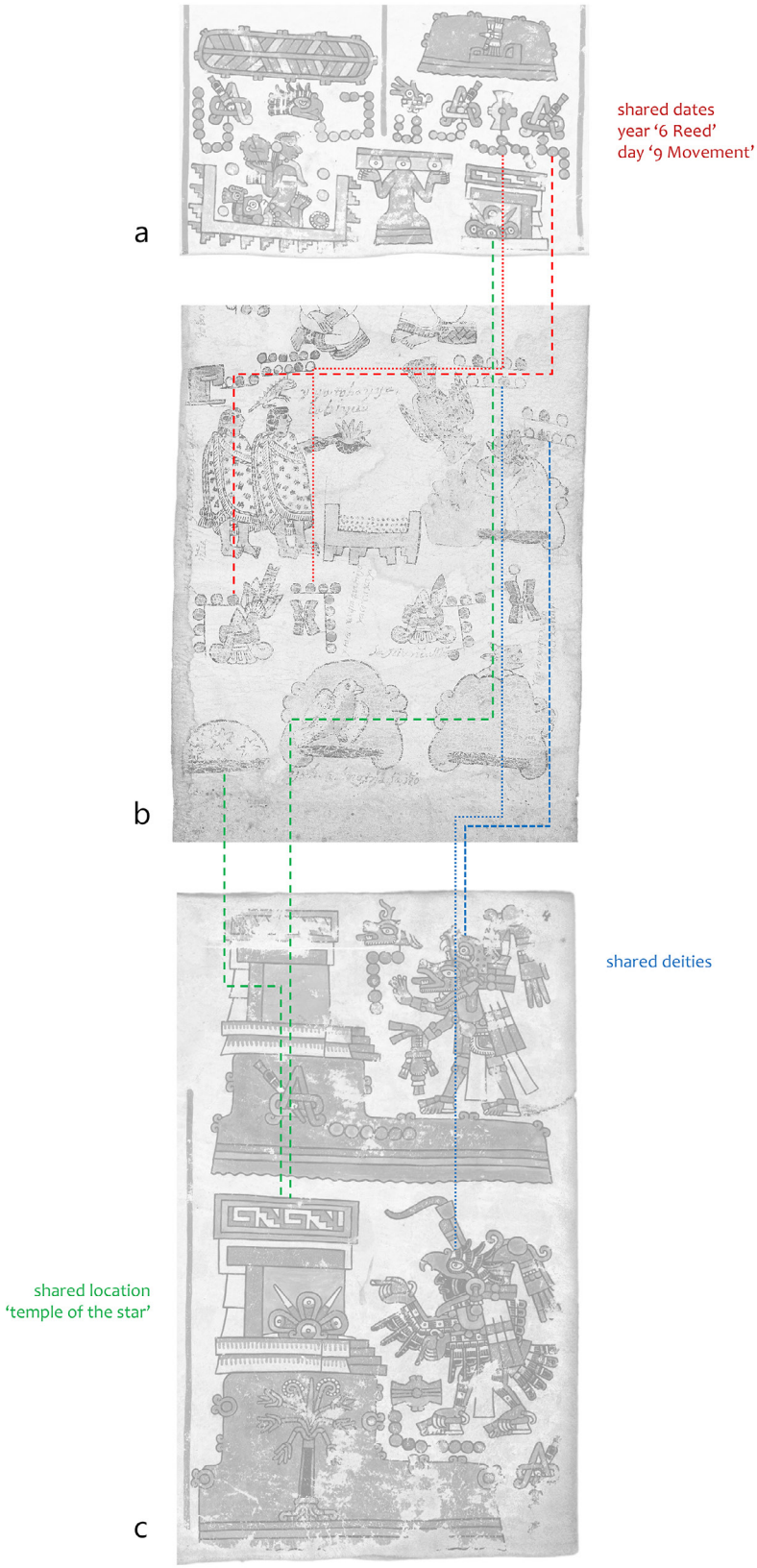


Figure 2.17: The Codex Tulane (*Codex Huamelulpan*) and the *Codex Vindobonensis*, showing shared dates and deities (Codex Tulane © Tulane University Digital Library, Latin American Library; details of the *Codex Vindobonensis* © Akademische Druck- und Verlagsanstalt, reproduced with permission).

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Chapter 3:
The Writing System of Epiclassic Central Mexico

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Of the many Pre-Columbian writing systems known in Mesoamerica, the hieroglyphic script used by the cultures of the Epiclassic period in central Mexico is among the least well known. Undoubtedly, this obscurity is brought about by the fact that this writing system remains undeciphered to this day. Contributing to this situation is the limited number of texts that comprise the known corpus of this writing system. The size of the corpus is directly affected by the temporal extent of the writing system since it is restricted to the Epiclassic (*c.* AD 650-1000), a relatively short, but important transitional period between the fall of centralized urban states of the preceding Early Classic (*c.* AD 250-650) and the ensuing rise of states in the Postclassic (*c.* AD 1000-1521). Much like the Epiclassic itself, the script of that period is an intermediate phase of the writing system that was employed in the central Mexican highlands for more than a millennium. As such the Epiclassic script derives in large measure from the writing system employed at Early Classic Teotihuacan and—although there are signs of discontinuity—the Epiclassic writing system also contributes to the development, conventions and sign inventory of the Postclassic writing system of the Aztec. Remarkably, the earliest scientific documentations of Epiclassic texts were made more than two centuries ago as attested by the works of Prussian naturalist and explorer Alexander von Humboldt (1810: 37-41, pl. IX) as well as the Mexican historian Antonio Peñafiel (1890). Nevertheless, the recognition of the Epiclassic script as an internally coherent writing system only took place relatively recently and can be attributed to the seminal work of the eminent Mexican scholar Alfonso Caso (1962) and the American art historian Janet C. Berlo (1989). To this day, no complete signary has been compiled and candidate languages remain to be clearly established. As such, it should be clear that the study of Epiclassic writing is still very much in its infancy and the present chapter serves only to provide a synthetic summary of the current state of knowledge, highlighting lacunae, recent progress and future prospects.

Geographic Distribution

The writing system of the Epiclassic is found at a series of sites in a rather compact area of the central Mexican highlands (Figure 3.1). The vast majority of these sites are located in and around the Valley of Mexico in relative proximity to the large urban centers of the Early Classic and Postclassic, including Teotihuacan, Cholula and Tenochtitlan (see Parsons *et al.* 1983; Wolf 1976). The largest and most important Epiclassic sites are found outside of the Valley of Mexico proper within an arc of 60 to 80km, and include Cacaxtla in Tlaxcala—with its famed polychromatic murals that show elements of and influence from Maya iconography (e.g. Brittenham 2008; Foncerrada de Molina 1980, 1993; Helmke and Nielsen 2013a, 2014a), Xochicalco in Morelos—that boasts the largest corpus of Epiclassic writing (e.g. Caso 1962; de la Fuente *et al.* 1995; López Luján *et al.* 1995; Sáenz 1967; Smith 2000a, 2000b; Smith and Hirth 2000), Teotenango in the State of Mexico—an acropoline fortress that is known for its significant monuments (e.g. Álvarez 1983; Piña Chan 1973), and Tula in Hidalgo—which also exhibits an earlier Epiclassic occupation and contemporaneous monuments (e.g. de la Fuente *et al.* 1988: 202-203; Nicholson 1971: Fig. 26).

These and the other capitals of Epiclassic city-states were established in strategic positions at the summit of hills in a clear break with the settlement patterns of the preceding and ensuing periods, where settlements were established in broad plains and valleys. In addition to their impregnable locations, these sites also exhibit high terraced hillsides, defensive walls and wide trenches cut into bedrock, features that betray both the high incidence of warfare during the Epiclassic and the strategic importance of these sites (Alvarado León and Garza Tarazona 2010; Baird 1989; Finegold 2012; González Crespo *et al.* 1995: 224, Fig. 3; Hirth 1989, 1995).

Located in proximity of the aforementioned places are other archaeological sites including Xinantecatl within the crater of the Nevado de Toluca, located 18km west of Teotenango, where a wonderful Epiclassic stela has been found (Helmke *et al.* 2013: 93-94; Luna *et al.* 2009: 70-73) (Figure 3.2a), as well as the settlement of Tetlama that lies just 3km north of Xochicalco. That the latter settlement is built upon an archaeological site is suggested by the presence of Epiclassic monuments within the local churchyard, one that was registered there in 1929—before being moved to the Museo

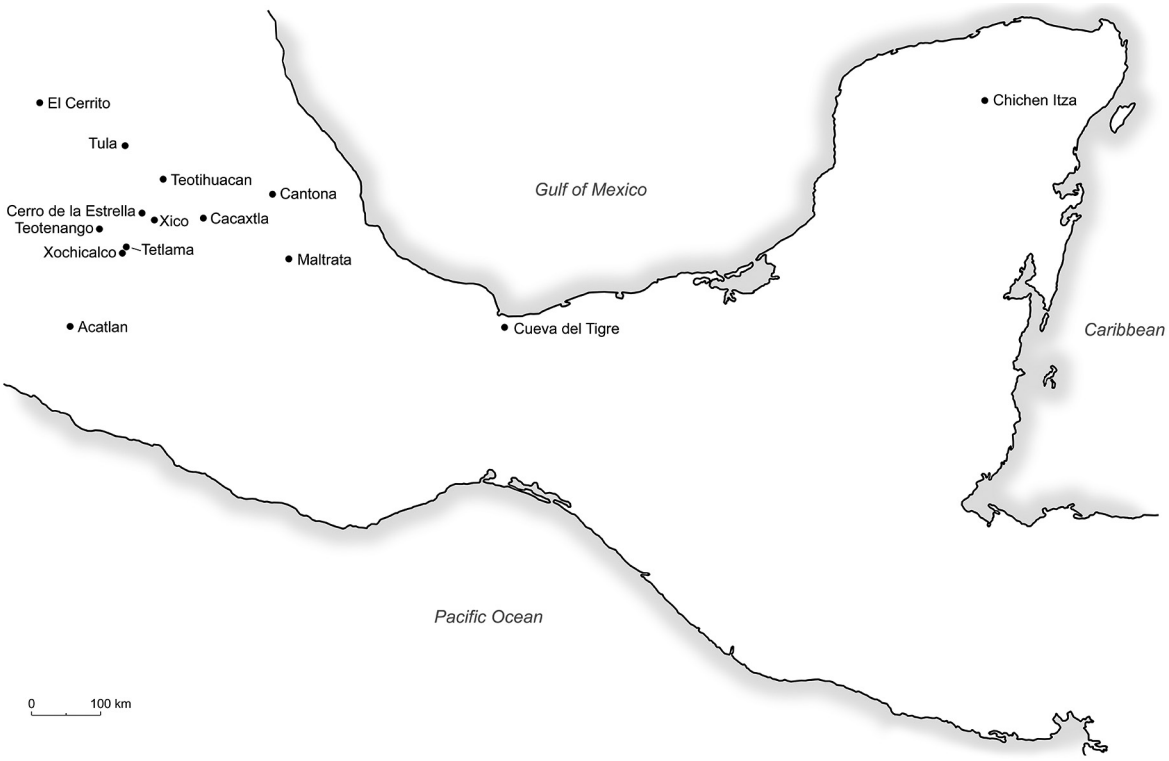

Figure 3.1: Map of Mesoamerica showing the location of archaeological sites mentioned in the text. The distribution of sites reveals that the heartland of Epiclassic writing is centered in central Mexico (map by Christophe Helmke).

Regional Cuauhnahuac (Angulo 2001: 105)—the other, a recently discovered Epiclassic stela (Figure 3.2b) and a series of carved facing stones incorporated as spolia within the perimeter wall of the same church (Helmke *et al.* 2019: 79-82). Within the Valley of Mexico proper, Epiclassic writing is restricted to the Cerro de la Estrella (Helmke and Nielsen 2011: 17, 51 n. 8-9, 2013b: 385; Montero García 2002: 185, 198, 208) and the neighbouring site of Xico (Peñafiel 1890: 293; Seler 1904: 160, Fig. 69), within what would be the *aaltepeeme'* of Colhuacan and Chalco, respectively.

Further afield is the prominent monolith at Maltrata in Veracruz (208km to the southeast) (Medellín Zenil 1962; Schávelzon 1982), as is the site of El Cerrito in Querétaro (184km to the northwest) where fragmentary panels have recently been discovered (Valencia Cruz and Bocanegra Islas 2013: 115-116) (Figure 3.3), and a carved panel from Acatlan de Guerrero (185km to the southwest) has also been recently reported (Rodríguez Cano 2013).[1] Fascinating are the examples of Epiclassic writing found at the site of Chichen Itza in Yucatan (over a thousand kilometres to the east) and the interactions these imply (e.g. Kepecs 2007; Smith 2007). There we find Epiclassic glyphs naming individuals as aliens in a Maya world, both by means of foreign writing and the language encoded in these glyphs (Schele and Mathews 1998: 252, Fig. 6.50; see also Morris *et al.* 1931: 311, Fig. 231, Plate 59W) (Figure 3.4a-c). In addition, the corner panels of Structure 2D4 at Chichen Itza were embellished with calendrical notations rendered in distinctive Epiclassic style (Desmond 2008; Ruppert 1952: 21; Seler 1902: 693) (Figure 3.4d-e). Whereas the distribution of these sites in part marks the extent of Epiclassic culture, in many ways the outlying sites may also have functioned as military and trading outposts to exploit resources in foreign lands.

Corpus and Media

The relatively short duration of the Epiclassic has resulted in a corpus that is decidedly modest, especially when compared to that of the other writing systems of Mesoamerica. Accounting for a definition of "text" is imperative, since it greatly influences the resulting quantification. The definition of "text" adopted here is of a glyphic record that is provided on a discrete entity, such as an artefactual object, monument, mural, or architectural unit, irrespective of the length of the original text or the degree of preservation, with the

[1] The extensive site of Cantona in Puebla (173km to the east) is another important Epiclassic site and although a carved panel and carved architectural elements have been found there (García Cook and Zamora Rivera 2010), these predate the Epiclassic and at present no written texts have been unearthed. Another site that may also exhibit Epiclassic texts is the Cueva del Tigre or Palancares in Veracruz (508km to the southeast), where at least two red-painted glyphic passages have recently been discovered (Erik Velásquez García, pers. comm. 2012; Iván Rivera Guzmán, pers. comm. 2020).

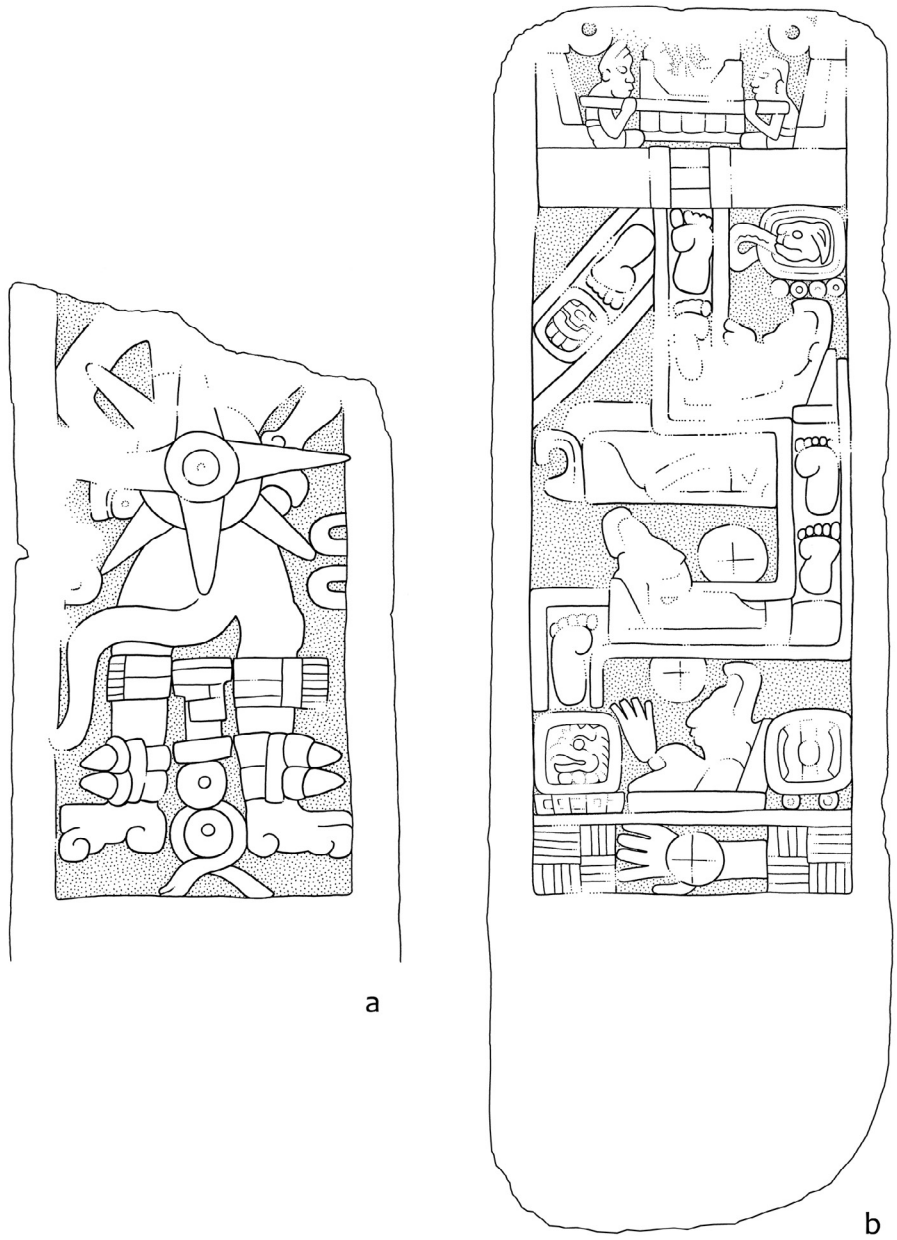

Figure 3.2: Epiclassic stelae.
a) from the site of Xinantecatl within the crater of the Nevado de Toluca; **b)** from the site of Tetlama, to the north of Xochicalco (height above lowest carving: 97cm)
(drawings by Christophe Helmke).

proviso that buildings can record multiple texts. By this definition, a single glyph on a sherd inevitably represents part of a text, as do the eroded traces of painted glyphs in a mural. On equal footing, but using examples from other Mesoamerican writing systems, the 617 glyph blocks of the three hieroglyphic panels in the Temple of the Inscriptions at Palenque thereby form one continuous text, as do the 676 glyph blocks of the *Codex Mendoza* that are arranged over 56 pages.[2]

Based on the published literature a tentative total of 71 Epiclassic texts can be provided (Table 1). In contrast, and using the same definition, the written corpus of the Maya may encompass a little under 2200 texts from 144 different sites (see Helmke 2009: 555).[3]

From the above tabulation, it is clear that a substantial portion of Epiclassic texts (*c.* 19%)—as with all Mesoamerican writing systems—are found on

[2] The figures for the *Codex Mendoza* include all glyphic compounds written on pages rendered in traditional codical format, but exclude the 194 calendrical notations written in the margins as well as the pages written exclusively with European script.

[3] This number should be contrasted to the figures provided by other scholars, including the estimate of 5 000 texts offered by Stephen Houston (1989: 22) or the 15 000 suggested by Felix Kupprat and Hugo García Capistrán (pers. comm. 2015).

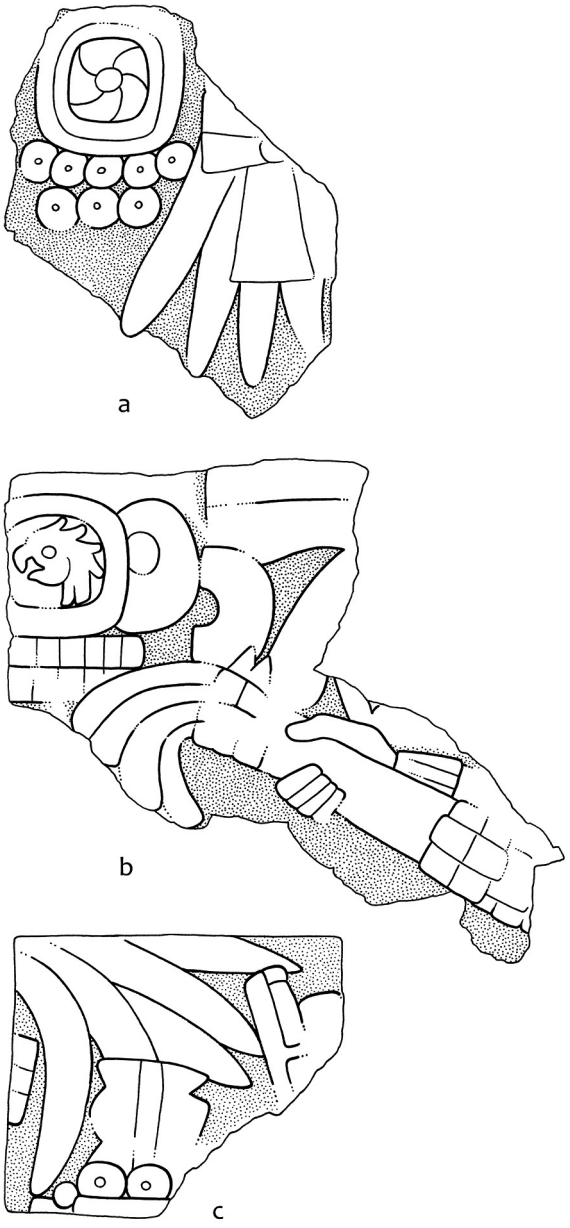

Figure 3.3: Fragmentary glyphic panels at the site of El Cerrito in Queretaro. **a)** Panel recording the calendrical notation '8 Pinwheel' besides a swathe of feathers; **b)** Individual brandishing an elaborate staff paired with a calendrical notation '10 Eagle'. **c)** Fragmentary panel with the calendrical notation '2 Movement' (drawings by Christophe Helmke).

freestanding monolithic monuments, especially stelae (Figure 3.2) and bifacial trapezoidal monuments that are typical of the period (Figure 3.5). Texts, however, predominate on architectural elements, including panels, stucco facades, carved masonry facades, and glyphic treads (*c.* 56%). When painted, texts were executed as murals on stuccoed walls, benches and on hieroglyphic stairs (*c.* 14%). Interestingly, the number of glyphic elements rendered as petroglyphs on natural stone outcroppings and boulders is also noteworthy (*c.* 7%) and confirms the transitional nature of Epiclassic writing, especially considering the relative dearth of glyphic rock art in the Early Classic and its importance in the Postclassic (see Galindo Trejo *et al.* 2002: 260-261, Fig. 3; Krickeberg 1969; Olivier and López Luján 2010: 81, Figs. 25-26; Pasztory 1983: 124-134; Rivas Castro 2005: 219, 223, Fig. 18). Although few unprovenanced texts are positively identified as Epiclassic, some monuments are known (e.g. Helmke and Nielsen 2011: 3, 13, Fig. 8, 2013b: 385, 395, Fig. 7.8; Urcid 2007).

In contrast to other Mesoamerican cultures—such as the Maya and Teotihuacan—the use of portable objects as supports for texts are extremely rare (*c.* 4%) and include the sherd of a vase found at Cacaxtla (López de Molina and Molina Feal 1986: Lám. 109b; Helmke and Nielsen 2013b: Fig. 7.2l), a ceramic plaque and a stuccoed travertine vase from Xochicalco (González Crespo *et al.* 1995: 263, Fig. 23; Sáenz 1963: 13-21). That being said, the sample may be highly biased by poor preservation since the distinct possibility remains that a large quantity of texts were once rendered on perishable materials including textiles and codices. Whereas archaeological examples of codices have not been recovered, depictions subsist, including a mural at Teotihuacan that renders a ritual specialist bearing an elongated object clearly marked with an early form of the logogram for 'day, feast' (see de la Fuente 1995c: 87, Fig. 8.5) (Figure 3.6a), functioning as the logogram **ILWI** in Nawatl, in much the same way as Aztec codices are marked a millennium later (see Thouvenot 1987: 289-290; see also Díaz, this volume) (Figure 3.6b). In addition, we may have a similar scene at Xochicalco, painted on the masonry bench within Structure K2 at the northern end of the eastern ballcourt (Nielsen *et al.* 2021: 255-264), suggesting that codices were one of the principal repositories of knowledge throughout Pre-Columbian Mesoamerica. In sum, whereas there may once have been an abundance of codices throughout the Epiclassic, the remaining number of texts is extremely limited, a feature that inherently imposes limitations to the potential decipherment of the writing system.

Figure 3.4: Examples of Epiclassic writing at the site of Chichen Itza, Yucatan.
a)-c) Foreign individuals bearing names written with Epiclassic writing, represented in the bas-reliefs of the Lower Temple of the Jaguar, including 'Reptile Eye', '7 Glyph A', and '5 Glyph A' (drawing by Linda Schele © David Schele, courtesy of the Los Angeles County Museum of Art). **d)-e)** Panels from Structure 2D4, which represent bundle signs that are topped by a so-called "trapeze and ray" year sign, juxtaposed by the coefficient 13 and a halved star (drawing after Seler 1902: Fig. 15, p. 693; photograph © Michel Zabé, courtesy of the Archivo Fotográfico "Manuel Toussaint", Instituto de Investigaciones Estéticas, UNAM).

Table 3.1: Distribution of Epiclassic texts according to site of discovery and the type of supports that these are found on. The heading "Monument" includes both complete freestanding monuments and fragments thereof; "Architectural elements" include stucco friezes, panels, and glyphic treads.

	Monuments	Architectural Elements	Murals	Rock Art	Artefacts	TOTAL
Acatlan de Guerrero	—	1	—	—	—	1
Cacaxtla	—	2	9	—	1	12
Cerro de la Estrella	—	—	—	2	—	2
Chichen Itza	—	4	—	—	—	4
El Cerrito	—	3	—	—	—	3
Maltrata	—	—	—	1	—	1
Teotenango	2	2	—	1	—	5
Tetlama	2	—	—	—	—	2
Tula	—	3	—	—	—	3
Xico	1	—	—	—	—	1
Xinantecatl	1	—	—	—	—	1
Xochicalco	5	25	1	1	2	34
Unprovenienced	2	—	—	—	—	—
TOTAL	13	40	10	5	3	**71**

Chronology

At present, we are unable to identify examples of Epiclassic writing that occur outside of the limits of the eponymous period itself. Nevertheless, the precursor of the Epiclassic script is clearly the dominant writing system that was in use at Teotihuacan (Taube 2000, 2011; Helmke and Nielsen 2021). Similarly, the Epiclassic script has also contributed to several key features of the ensuing writing system of the Postclassic Aztec, including a range of logograms (Figure 3.7). As such, we may slowly be able to speak of a greater central Mexican writing system, wherein three major phases are recognized, each represented by temporally restricted manifestations of the same writing system rather than a commensurate number of wholly distinct and independent writing systems (see also Berlo 1989: 19). Important shared features pertaining to this broad scribal tradition will be mentioned, below.

In keeping with Mesoamerican writing systems, most Epiclassic texts are accompanied by calendrical notations—in the ritual calendar that compares to the *toonalpoowalli* of the Aztec. Thus, there is a great prospect that these calendrical notations will eventually serve to anchor the dedicatory and narrative dates of texts. For the time being, however, much remains to be done before the calendar is completely understood and anchored to the Julian calendar, not the least since there is disagreement as to the identity of calendrical signs (e.g. Helmke and Nielsen 2011: 6-12, 2013b: 389-394; Urcid 2012: 856-860; Urcid and Domínguez 2013: 643-646) (Figure 3.8). Potential anchors are afforded by the calendrical notations that may commemorate New Fire ceremonies (see Sáenz 1967: 18-19, 1968: 188-190; Smith and Hirth 2000: 44-45, Fig. 3.21). Most prominent among these are dates involving the day sign dubbed "Reptile Eye"—which may well record years named after the 13th day 'reed', in the set III year-bearer system—including examples from Xochicalco, Cacaxtla, Tula, and the Cerro de la Estrella (de la Fuente *et al.* 1988: 202-203, n. 147; Helmke and Nielsen 2011: 12-20, 2013b: 394-401; Helmke and Montero García 2016; Seler 1904: 138-139, Fig. 4; Smith 2000a: 61-64, 2000b: 85) (Figure 3.9). Based on present evidence the shared dates at Xochicalco and Cacaxtla appear to represent contemporaneous ritual observances at both sites (see Helmke and Montero García 2016: 73-74). The shifting coefficients remain to be properly accounted for and is at odds with Postclassic practices since New Fire ceremonies were traditionally held on the fixed date '2-Reed' (e.g. Anderson and Dibble 1953: 25-32; Broda de Casas 1969: 25, 28; Caso 1967: 134-140). As a result, one wonders if the coefficients represent cumulative

Figure 3.5: The two faces of the trapezoidal monument from Teotenango.
a) A seated feline, possibly a puma, wearing a necklace and captioned by '2 Rabbit'. **b)** Supernatural butterfly wearing a necklace bearing the caption '13 Reptile Eye' (photographs by Christophe Helmke).

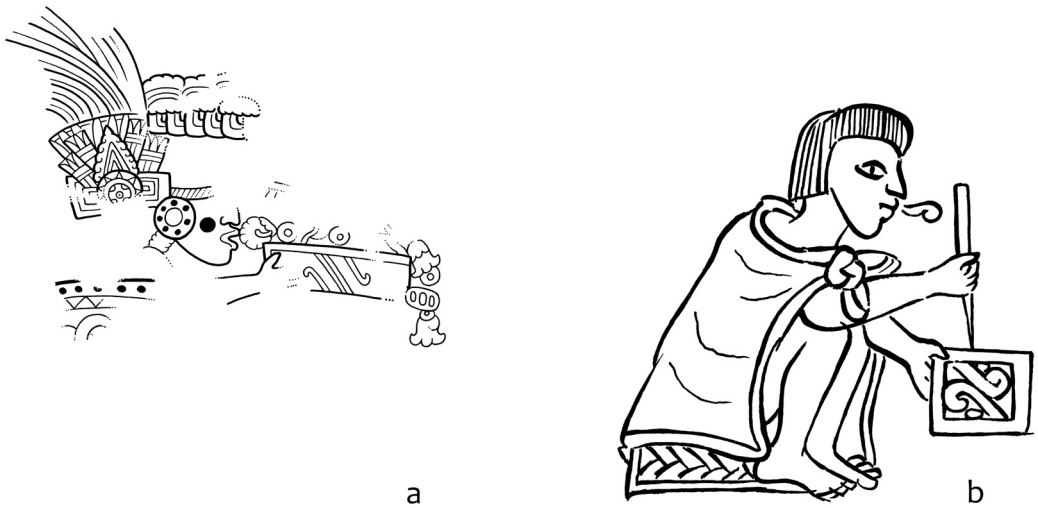

Figure 3.6: Depictions of codices in central Mexican iconography, represented by the logogram for 'day, feast', suggesting that these are divinatory almanacs. **a)** Early Classic example from Teotihuacan, wherein a figure bears a codex in a procession (Murals 1-5, Room 1, Platform 14, Zona 3); **b)** Aztec scribe writing a codex (*Codex Mendoza*, fol. 70r)
(drawings by Christophe Helmke).

statements of sequential events during the Epiclassic, especially since an Aztec example is known, which is a copy of an Epiclassic antecedent (Broda de Casas 1969: 28-29; Caso 1967: 15; Pasztory 1983: 111, Fig. 53) (Figure 3.10).

That being said, the temporal distribution of Epiclassic texts can be realized on the basis of the archaeological and stylistic analyses of the supports that bear them. Thus, ceramic and carbon dating of associated strata and architectural phases serve to date the associated texts. Nevertheless, at present the archaeological dating is not sufficiently refined to allow us to segregate the earliest from the latest texts and to begin coherent palaeographic analyses. At Xochicalco, for instance, the excavations within the monumental epicentre have failed to reveal any concrete evidence of an Early Classic occupation, thereby leading to the conclusion that the site was founded in the Epiclassic (González Crespo *et al.* 2007, 2008) and making its monuments

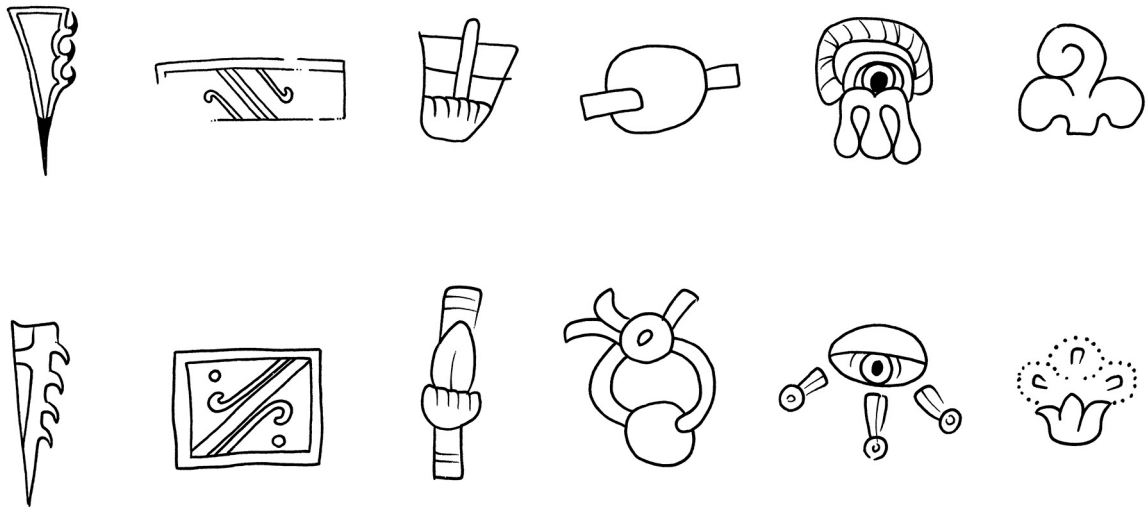

Figure 3.7: The continuity of central Mexican writing as exemplified by the use of shared logograms. The upper row shows a selection of signs in Teotihuacan writing, whereas the lower row represents precisely the same set of signs in Aztec writing. These logograms are read in Nawatl (from left to right) as: *witz-tli* 'maguey leaf', *ilwi-tl* 'day, feast', *mi-tl* 'arrow' or *aka-tl* 'reed', *chalchiwi-tl* 'jewel, bead', *ixayo-tl* 'tears' and *ichka-tl* 'cotton' (drawings by Christophe Helmke).

and texts contemporary to its heyday, as defined by a series of carbon assays spanning from AD 635 to 1014 (González Crespo *et al.* 2008: Fig. 9; 2007: Fig. 5). The presence of Epiclassic texts at Tula, including one that was recycled in the core of the famed Str. B (de la Fuente *et al.* 1988: 202-203, n. 147) (Figure 3.9c) confirms the Epiclassic occupation of the site, especially in the portion of the site known as Tula Chico, perhaps during the latter facet of the Epiclassic (Fournier and Bolaños 2007; see also Nicholson 1971: Fig. 26). At Cacaxtla, a series of carbon assays have been used to anchor the relative chronology afforded by the architectural stratigraphy to between AD 680 and 830 (Moreno Juárez *et al.* 2005; Brittenham 2008: 198-250; see also López de Molina and Daniel Molina Feal 1986). Independently of the stratigraphic and radiometric dating, the authors have elsewhere proposed a series of stylistic datings for the murals of Structures A and B, spanning from AD 692 to 810, by cross-referencing iconographic elements to securely-dated examples in the Maya area (Helmke and Nielsen 2013a, 2014a). These ranges correspond well to the whole of the Epiclassic period and as such, the datings of the texts are well established, until their calendrical content can be unlocked to their fullest potential.

Graphic Characteristics

Epiclassic writing shares a large number of graphic features and underlying principles with other Mesoamerican scripts especially those of western Mesoamerica, most notably that of Teotihuacan and of the Aztec. As such, even though Epiclassic writing remains undeciphered at present, we are able to identify several such features, the most salient of which are presented here.

Signs in Mesoamerican writing in general have a figurative origin and Epiclassic writing is no exception. This apparent graphic transparency has often mislead researchers since both logograms and phonograms can be highly figurative. As such, the degree of figurativeness in no way serves to distinguish sign types from one another, not the least since signs can be polyvalent and serve as phonograms in one context and as logograms in another. Furthermore, signs are often used exclusively for their phonetic value, according to the rebus principle (meaning that a sign is understood independent of its visual characteristics), thereby disassociating the semantic referent from the utterance cued by the graphic sign. In addition, even the signs that appear to be abstracted or stylized all stem from figurative referents in the tangible world. In most cases, the degree of abstraction is the product of a lengthy process of graphic evolution, or subject to the familiarity of the modern viewer to the cultural conventions of graphic representations, or even the constituents of the material culture.

From the well-understood writing systems of the Maya and Aztec it is clear that signs can be represented in three basic graphic forms, namely as so-called geometric forms, as head variants and as full-figure glyphs (see Zender 1999: 47-48). Whereas all signs can theoretically be rendered in all of these forms without alteration of their function or reading, convention

Figure 3.8: The calendrical signs of Epiclassic writing.
Each sign represents a named day in the sequence of twenty that forms the basis of the 260-day calendar in use during the Epiclassic. General meanings and placement in the *veintena* sequence are provided below each sign. Some duplication can be noted and are due to diachronic paleographic features as well as regional variation in the script. On the lowest line is a selection of day signs rendered outside of cartouches. Missing are 'wind' [2], and 'grass' ~ 'tooth' [12]
(drawings by Christophe Helmke).

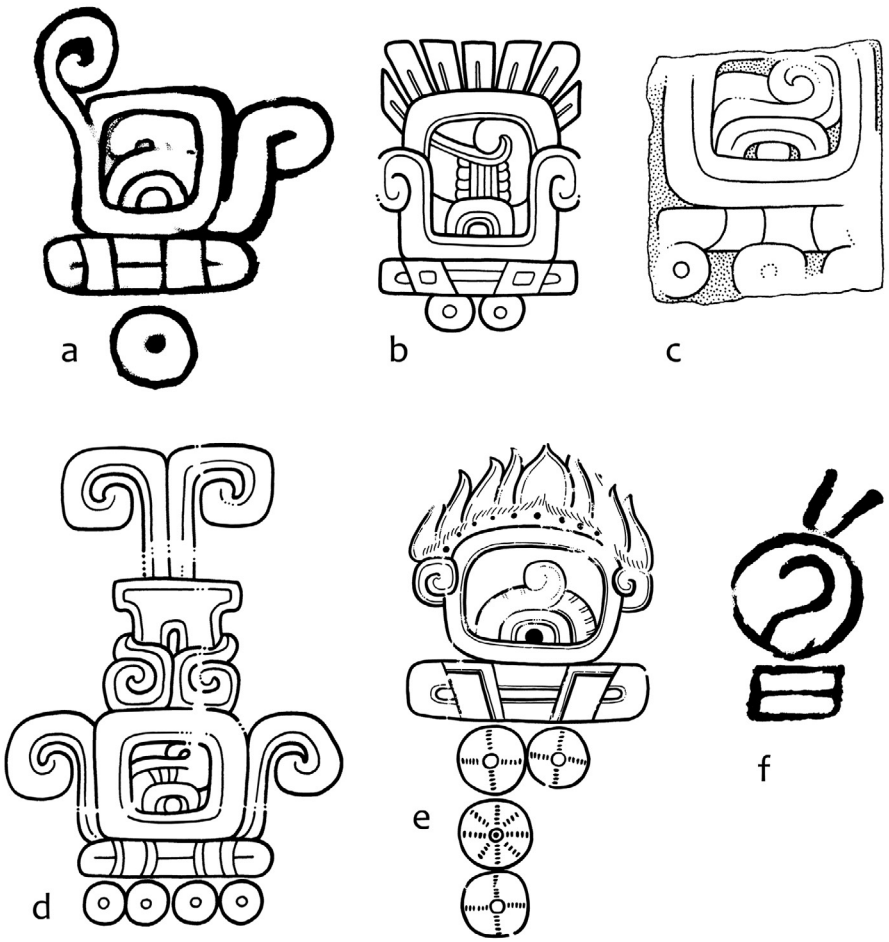

Figure 3.9: Possible records of New Fire ceremonies involving the "Reptile Eye" glyph with varying coefficients. **a)** '6-RE' (Cerro de la Estrella, PT-11), **b)** '7-RE' (Xochicalco, Stela 1), **c)** '8-RE' (Tula, Structure B), **d)** '9-RE' (Xochicalco, Pyramid of the Feathered Serpents), **e)** '9-RE' (Cacaxtla, Structure A), and **f)** '10-RE' (Cerro de la Estrella, PT-11) (drawings by Christophe Helmke).

Figure 3.10: Aztec copy of an original Epiclassic sculpture commemorating a New Fire ritual. The bar-and-dot coefficient is rendered in typical Epiclassic fashion and below the day sign, as are the stylized flames in the background. The anachronistic day sign has been rendered in Aztec writing to record the date '2 Reed', the typical date for the commemoration of New Fire rituals at the end of the 15th and start of the 16th century (photograph by Christophe Helmke).

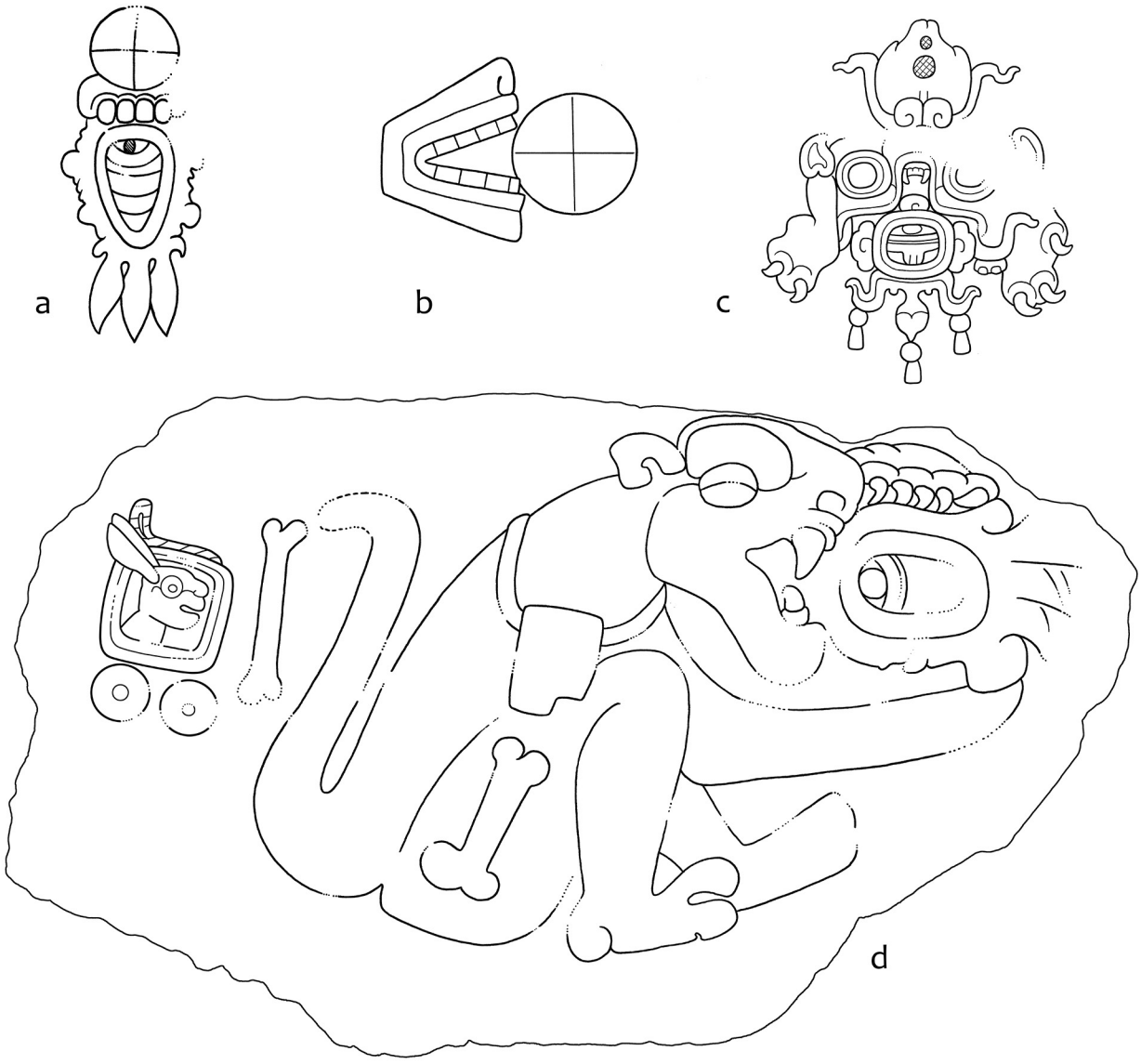

Figure 3.11: Examples of a warrior-priest title found in Epiclassic texts, written in three basic graphic forms, including a)-b) geometric, c) head-variant and d) full-figure. **a)** Cacaxtla, Structure B; **b)** Xochicalco, Pyramid of the Feathered Serpent; **c)** Piedras Negras, Stela 8; and **d)** Teotenango, carved boulder (drawings by Christophe Helmke).

dictates that some signs are more frequently rendered as either geometric forms or head variants—full-figure glyphs being quite rare in all cases. The same conventions appear to be applicable to central Mexican writing in general and for the Epiclassic where good examples are found for a possible warrior-priest title (see Helmke and Nielsen 2011: 23-28, 2013b: 404-410) (Figure 3.11).

Another graphic principle that is widespread throughout Mesoamerica is that of *pars pro toto*, wherein a larger object or entity can be reduced to its single most diagnostic element. Thus, at Cacaxtla 'deer' can be represented by its antler (Figure 3.12c-d), at Xochicalco 'house' is represented by its decorative merlon, known as an *almena* (Figure 3.12a-b), and at Teotihuacan a headdress—denoting an exalted title and associated office—is represented by its distinctive tassel (Helmke and Nielsen 2011: 9, 2013b: 392-393; Helmke *et al.* 2013: 93; Millon 1988) (Figure 3.12e-f).

Glyph compounds, or blocks, are less squared than those of Maya or Isthmian writing, and in this sense show much greater affinity with other central Mexican writing systems. Nevertheless, calendrical signs mostly occur within squared cartouches with rounded corners. This is one of the many palaeographic attributes that demonstrates that Epiclassic writing is an integral and intermediate phase of a greater central Mexican writing system, since the same signs are represented

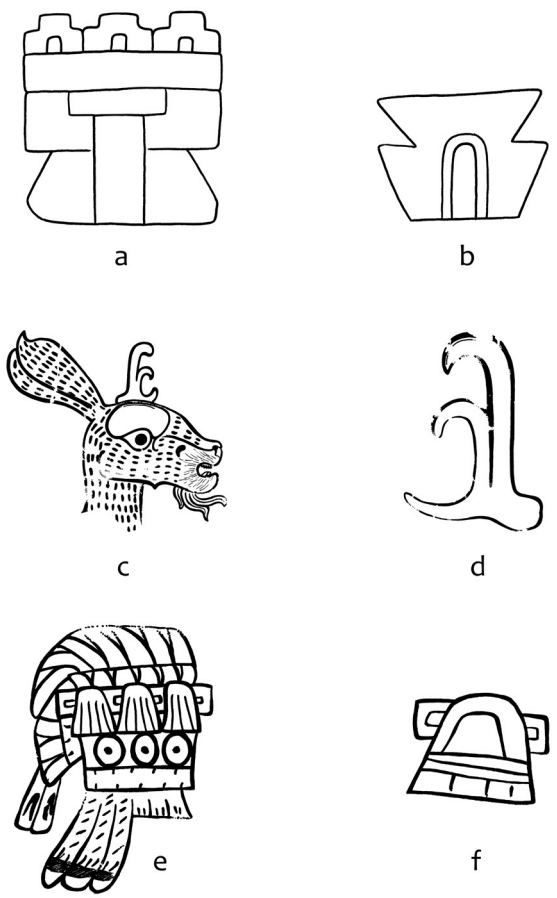

Figure 3.12: Examples of the *pars pro toto* principle in central Mexican writing. A house and its *almena*: **a)** Xochicalco, Stela 2, **b)** Xochicalco, Lápida de los cuatro glifos (P1). A deer and its antler: **c)** Cacaxtla, Structure A, **d)** Cacaxtla, Structure B. A tasseled headdress and its distinctive tassel: **e)-f)** Teotihuacan, Techinantitla murals (drawings by Christophe Helmke).

in circular cartouches at Teotihuacan and in perfectly square cartouches among the Aztec (Figure 3.13).

Numerals are typically written with a combination of bars and dots, the former representing '5' and the latter units of '1', and combinations of up to '13' are attested in the corpus of Epiclassic writing, as these relate to the *toonalpoowalli*. As such, the Epiclassic script maintains a widespread feature of Mesoamerican writing systems of the Classic period, but at the same time also anticipates features of later Aztec and Mixtec writing, since Epiclassic numerals are also represented by a series of dots in excess of five, or as odd combinations of dots and bars (Helmke and Nielsen 2011: 3-6, 2013b: 385-389) (Figure 3.14). This underscores the transitional nature of Epiclassic writing and is another trait demonstrating the continuity and graphic evolution of signs within central Mexico.

Glyphic notations are characteristically terse and often times reduced to a single calendrical notation or a combination of signs that together label a person or a place with its name. As such, the verbal complex in Epiclassic writing, and in western Mesoamerica in general, is greatly deemphasized and reduced to an absolute minimum. This is not to say that verbal statements do not exist, but when present they appear to record an uninflected verbal root that serves to qualify the iconographic scene they accompany. This stands in strong contrast to the writing systems of eastern Mesoamerica where we see long linear textual sequences recording language and a thriving verbal complex, although abbreviation and even underspelling are also prevalent features.

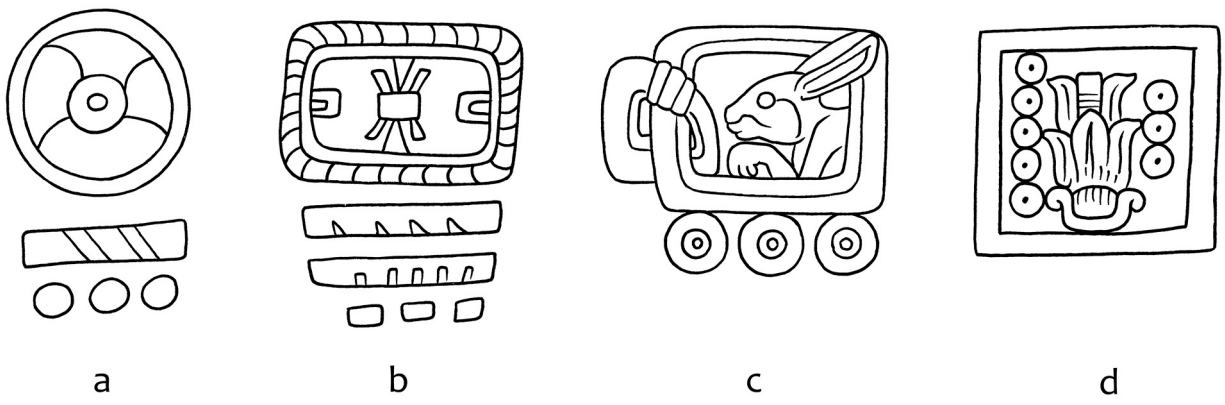

Figure 3.13: The graphic evolution of day sign cartouches in central Mexican writing from the Early Classic to the Early Colonial period. **a)** Early Classic, *tecalli* statuette from Teotihuacan; **b)** late Teotihuacan graffito incised within a ceramic vessel; **c)** Epiclassic day sign on Lápida L3 of Xochicalco; **d)** Aztec date as recorded in the *Codex Boturini* (drawings by Christophe Helmke).

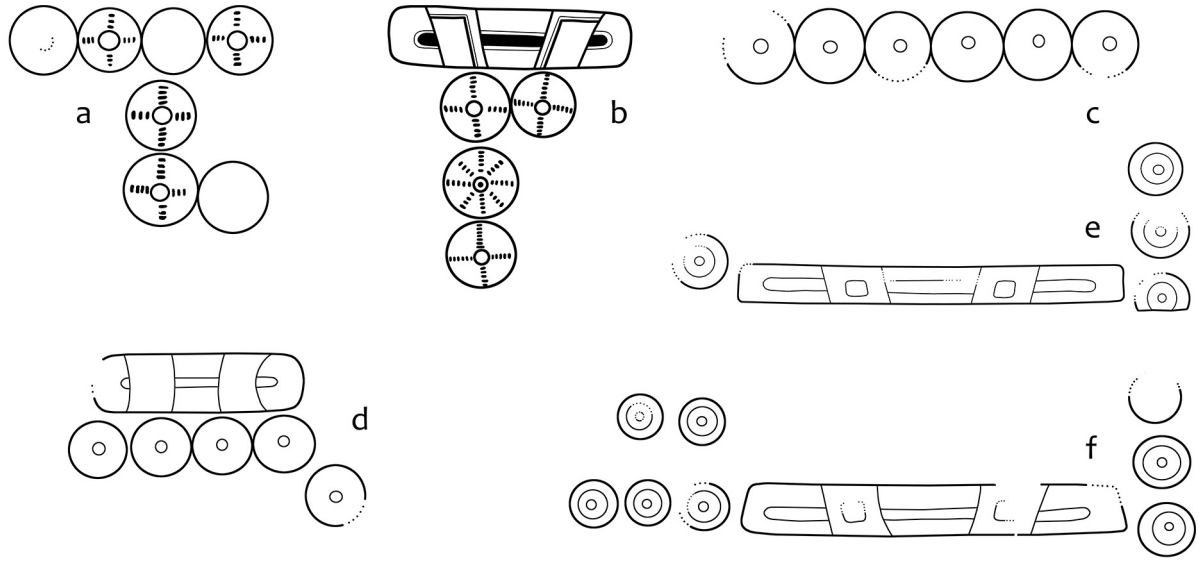

Figure 3.14: Unusual combinations of bars and dots demonstrating the transitional nature of Epiclassic writing. **a)** Cacaxtla, Structure A, North Jamb; **b)** Cacaxtla, Structure A, North Pier; **c)** Xochicalco, R18; **d)** Xochicalco, Pyramid of the Feathered Serpent, AW1; **e)** Xochicalco, Pyramid of the Feathered Serpent, BS3; and **f)** Xochicalco, Pyramid of the Feathered Serpent, BS1 (drawings by Christophe Helmke).

When more than two glyph blocks appear, a small blank space is introduced between them to segregate two different words, thereby betraying syntactic categories. Thus, calendrical notations, anthroponyms, titles, toponyms and in the rare cases that verbal elements are recorded, these all tend to be written as separate glyph blocks. That being said, unlike other writing systems, no distinct separator signs were developed or used in central Mexico, and all glyphs were written in *scriptio continua*.

Considering the many points of commonality just outlined it should be clear that Epiclassic writing—despite its distinctive traits and parameters—has essentially the same workings and operated as any other writing system in Mesoamerica. Whereas no complete signary of Epiclassic writing exists at present, initial work in tabulating the number of signs employed in this writing system suggests that there were *c.* 150 signs in use at any given time during the Epiclassic (Helmke and Nielsen 2011: 1, 2013b: 383-384). This can be contrasted to Teotihuacan writing where *c.* 200 signs were used (Langley 2002: 299-301), Maya writing where anywhere between 300 and 400 signs were used in any given period (Knorozov 1958: 289; Mathews and Bíró 2008) and Aztec writing where *c.* 450 signs were most commonly used (Cases Martín and Lacadena García-Gallo 2013).[4] Since the number of signs employed in a script in part betrays what type of writing system it is (i.e. logographic, syllabic, alphabetic) (see Coe 1992: 32-43; Daniels and Bright 1996: 142-143, 155) and knowing that Aztec and Maya writing are mixed logophonetic writing systems, it should thus be clear that the central Mexican writing systems of the Epiclassic and Early Classic were likewise logophonetic. This is an important working hypothesis that guides on-going and future investigations, and leads us to the next question, the current state of decipherment.

State of Decipherment

Remembering that Epiclassic writing has only recently been identified as a writing system at all (Caso 1962; Berlo 1989) and that a complete corpus and signary are still lacking, the state of decipherment is evidently in its infancy. However, by putting Epiclassic writing in a wider perspective, some useful observations can be advanced. In general terms, the shared features of Mesoamerican writing systems just outlined, imply a common descent from the earliest writing system developed in Mesoamerica (e.g. Justeson 1986; Justeson *et al.* 1985: 31-37; Lacadena 2011; Marcus 1976; Rodríguez Martínez *et al.* 2006; Saturno *et al.* 2006; Stuart *et al.* 2022). More specifically, the features that Teotihuacan and Epiclassic writing have in common evidently imply that the latter descends from the former, in much the same way that some of the features and signs of Aztec writing can be traced back to Teotihuacan, via the Epiclassic (Helmke and Nielsen 2011, 2013b, 2013c, 2014b; Nielsen and Helmke 2011, 2014; Taube 2000, 2011). Despite this continuity there are also salient signs of discontinuity, especially in realm of the phonograms of Aztec writing,

[4] These numbers attempt to account for the number of signs that were most commonly used for any given century, rather than providing the sum total of all signs and their allographs in use throughout the entire duration of a script. If the totality of the sign inventory were rendered here, then Maya writing would exceed 800 glyphs, whereas for Aztec writing the total would be closer to 2000 (Alfonso Lacadena, pers. comm. 2013).

since most of these signs are absent from the Epiclassic and Teotihuacan corpus. This observation has several important implications: 1) That the graphically transparent Aztec phonograms were likely developed by means of acrophony late in the history of central Mexican writing, 2) which in turn implies a break with the past as well as language shift and/or replacement and 3) that the signs that have existed throughout the course of central Mexican writing system, despite their graphic evolution, are logograms.

All of these conclusions provide important parameters for current research and despite the strides that have been made in recent years, the low quantity of Epiclassic texts, coupled with the absence of clear biscripts greatly frustrates decipherment efforts. Despite these complications, some tantalizing evidence exists for a limited number of biscripts involving Teotihuacan writing (Helmke 2014), which have already begun to support the decipherment process and among other things have clarified beyond a doubt the logogram for 'mountain' in Teotihuacan writing (Helmke and Nielsen 2013c; see also Helmke and Nielsen 2014b).

Furthermore, whereas it may seem premature to discuss reading order for an undeciphered writing system, some tentative comments can nevertheless be made. Much as with most figurative hieroglyphic writing systems, individual signs employed in Epiclassic writing faced towards the start of the sentence, thereby betraying their underlying orientation and reading order. Unlike Maya and Isthmian writing, however, the internal reading order of glyph blocks in central Mexican writing systems does not follow strict rules since ample artistic provisions were made for graphic combinations. Whereas the convention of the Tetzcoco scribal school of Aztec writing (see Lacadena 2008) was generally from bottom to top and from the middle outwards, the same principles do not appear to have been conventional in the Epiclassic and Early Classic. As such, readers have to identify all the constituent parts before concluding as to the most likely and intended combination, or reading. In much the same way, the reading order of linear arrangements of glyphs does not appear to conform to a standard. Thus, the linear sequences on the frontal friezes of the Pyramid of the Feathered Serpent appear to be read as horizontal rows, both apparently from left-to-right (Figure 3.15). Similarly, at Cacaxtla, the text of the hieroglyphic stair of the Red Temple also appears to be read as a horizontal row (Helmke and Nielsen 2011: 29-41, 2013b: 411-420), but the texts adorning the piers of Structure A are read from top-to-bottom in asymmetrical columns (Helmke and Nielsen 2011: 41-45, 2013b: 420-422) (Figure 3.16). The texts that span over the four sides of the three glyphic stelae at Xochicalco, in turn, appear to be read in boustrophedon from bottom-to-top on the front and rear sides and in the opposite directions for the lateral sides (Figure 3.17) (Helmke and Nielsen 2011: 45, 2013b: 422; Pasztory 1976; Sáenz 1961, 1964; Smith 2000b: 85), thereby preserving a reading order that can be traced back to Teotihuacan, and which subsisted until the

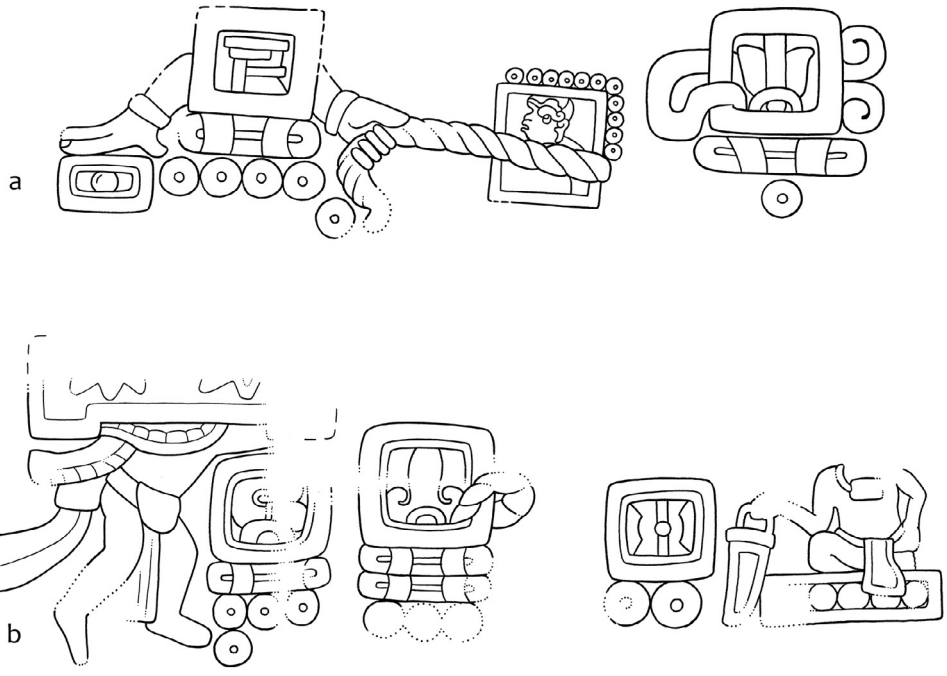

Figure 3.15: Linear sequences of glyphs recorded on the Pyramid of the Feathered Serpent at Xochicalco. **a)** North frieze, West facade, AW1; **b)** South frieze, West facade, AW4 (drawings by Christophe Helmke).

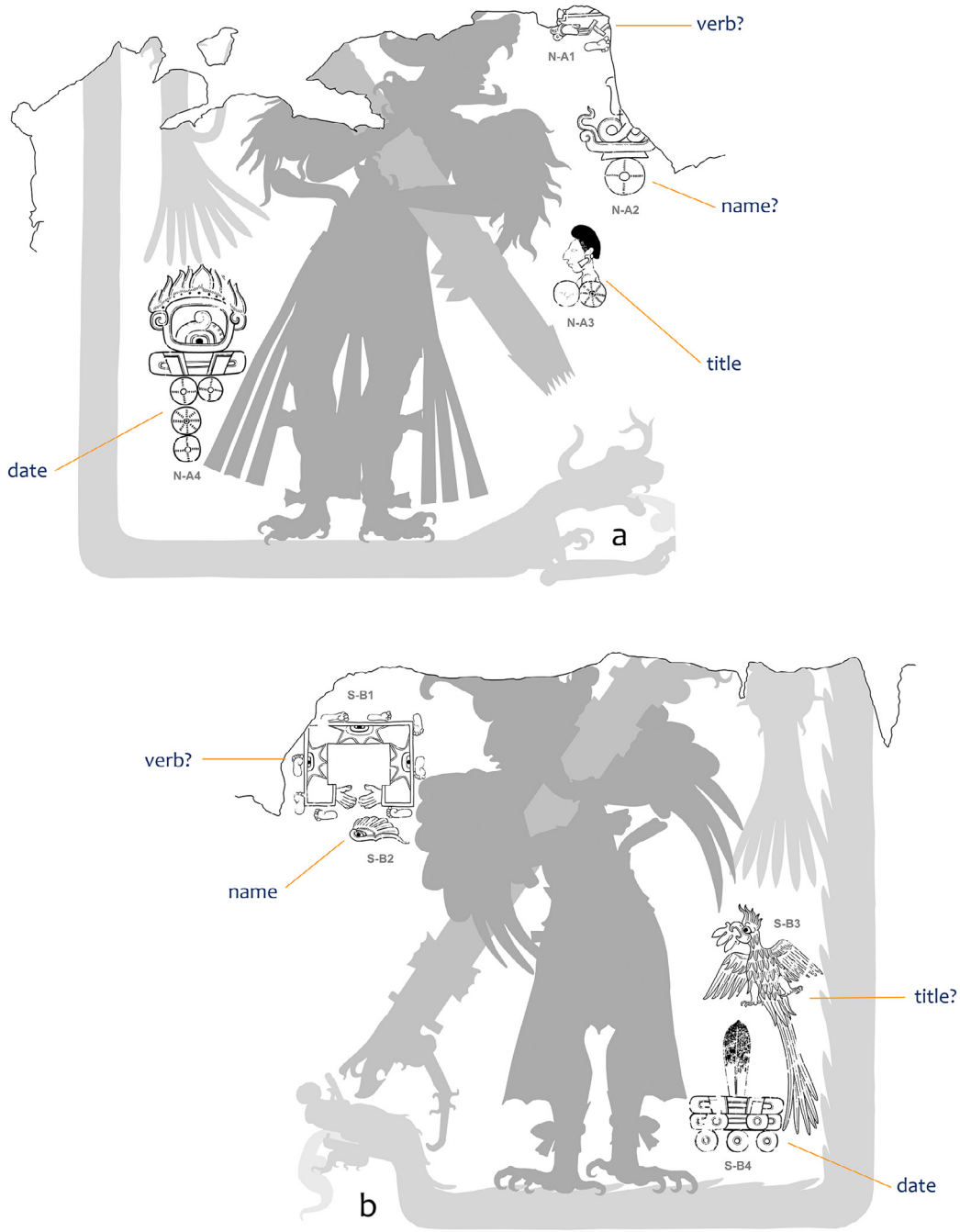

Figure 3.16: Asymmetrical columns of glyphs recorded on the piers of Structure A at Cacaxtla. **a)** North pier; **b)** south pier (drawings by Christophe Helmke).

early Colonial in Aztec codices (Nielsen and Helmke 2011: 361-362, Fig. 16; Helmke and Nielsen 2021: 46, Fig. 14).

In identifying the reading order of linear texts it has been found that most clauses start with what has been called an "enclosure sign", that names and titles occur medially (with names preceding titles), that toponyms, if present, follow and that clauses are closed by calendrical dates. This structure is quite regular and is repeated in the texts of Cacaxtla and Xochicalco and finds analogies in Early Classic examples from Teotihuacan. On the whole it is thus possible to begin outlining the basic word order of the language recorded in Epiclassic writing and interestingly it seems to be verb-initial, conforming to the basic word order of

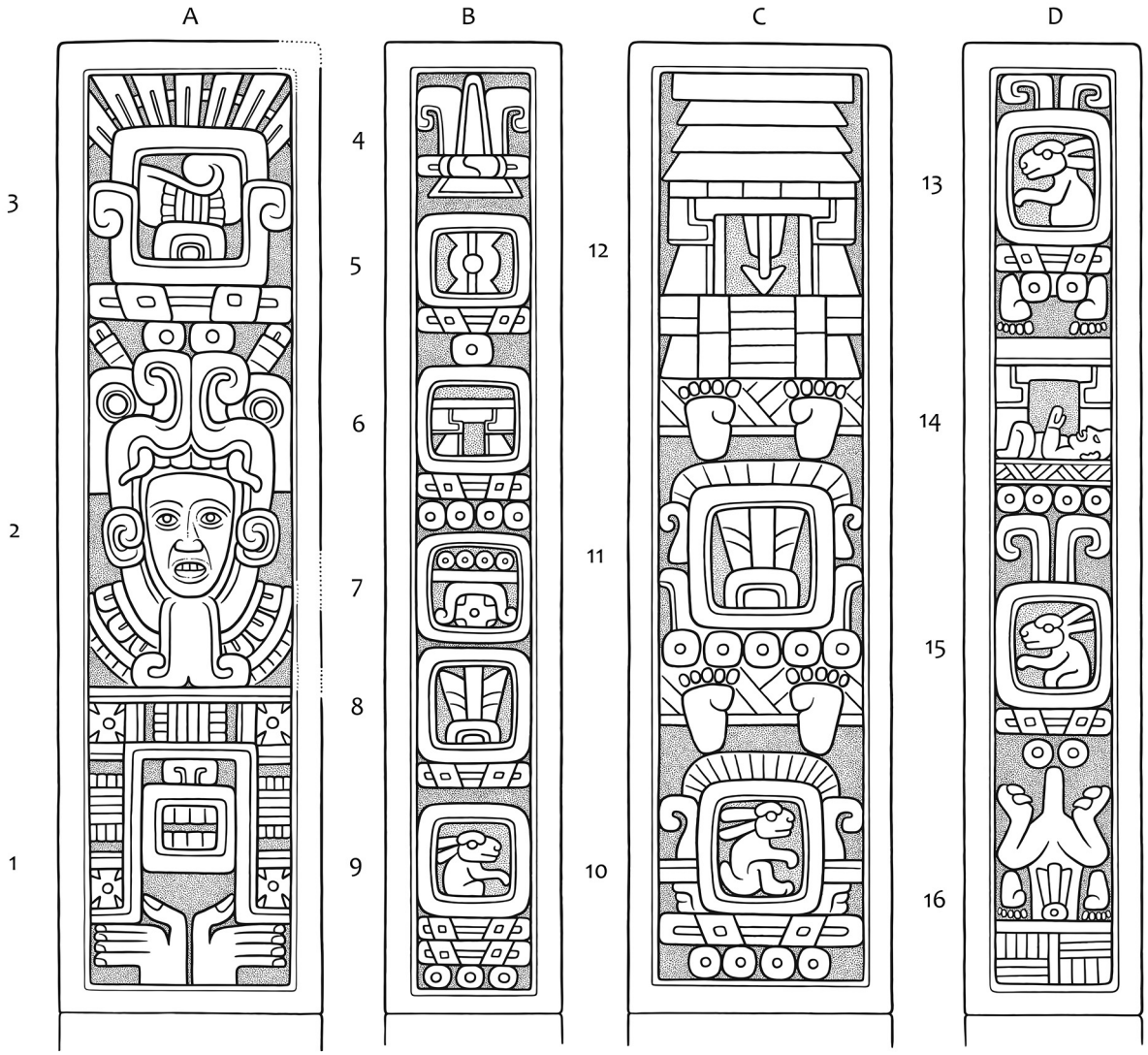

Figure 3.17: An example of bostrouphedon reading order present in Epiclassic writing: Xochicalco, Stela 1 (height above lowest carving: 1.23m). Note the orientation of the footprints that follow the reading order (in ascending numerical order), starting at column A, before going on to column B, C and D, down to D16 where the text ends (drawing by Nicolas Latsanopoulos).

Nawatl and Otomían languages, but excluding Mije-Sokean and Totonakan languages (Helmke and Nielsen 2011: 46-48, 2013b: 422-425: Lacadena 2010: 1028-1029).

In addition to determining the basic word order of linear texts, certain combinations of signs can also be partially read. In large measure, this is based on a fundamental and underlying feature of the language encoded in the glyphs. When a single sign occurs it must, by necessity, function as a logogram in order to be able to convey a linguistically viable unit. Similarly, when two glyphs occur in a single compound, it is most likely that these also represent logograms, wherein one qualifies the other. Considering calendrical notations, the numerals thereby function as the qualifiers of the named time unit, in much the same way that toponyms refer to a particular physiographic feature coupled with at least one qualifier. In these instances, whereas the phonetic values of the logograms remain unknown, it is possible to propose what can be called semantic decipherments wherein the identity of the two signs is elucidated. This tentative process has been very productive and has yielded favourable results, especially since the candidates for phonograms in Epiclassic writing are few.

Calendrical notations aside, promising semantic decipherments have been made for toponyms and titles in Epiclassic writing. For instance at Cacaxtla one of the glyph blocks in the linear text on the northern pier of Structure A, represents the head of a captive associated with a numeral formed by two disks. As such

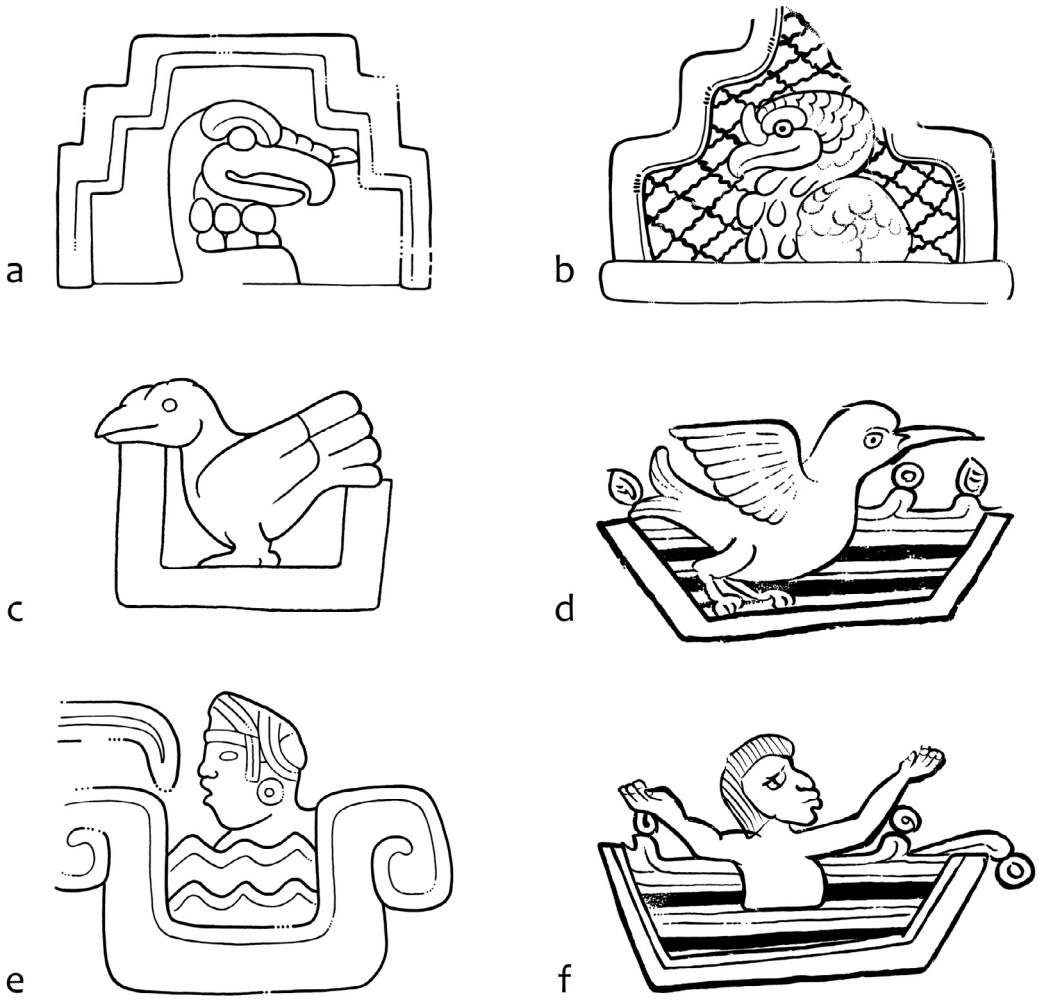

Figure 3.18: Toponyms recorded in the texts of Xochicalco compared to analogous place names. **a)** 'Turkey Mountain' (Xochicalco, Stela 2); **b)** 'Turkey Mountain' (Cacaxtla, Red Temple, Hieroglyphic Stair). **c)** Mythic place of origin written with a bird within an enclosure or canal sign; **d)** the place name <*huiçilapā*> (*Codex Mendoza*, fol. 23r). **e)** A man within a body a water in a shallow basin, with a feather at his mouth (Xochicalco, Pyramid of the Feathered Serpent, BS5); f) the toponym <*ahuilizapan*> (*Codex Mendoza*, fol. 48r) (drawings by Christophe Helmke).

it is not difficult to read this segment as 'two-captives', undoubtedly serving as a martial title for the feline-canine warrior represented on the same pier (Helmke and Nielsen 2011: 44, 2013b: 421; Helmke 2020: 40, Fig. 8e; see Guerrero Martínez 2013: 497-500). Similar count-of-captive titles are in fact known for the Classic Maya (Stuart 1985) and were the basis for promotion among Aztec warrior orders (Berdan and Anawalt 1992: fols. 63v-65r).

As for place names, a prominent toponym that can be translated as 'guajolote-mountain' has been identified in the texts of Cacaxtla and Xochicalco (Figure 3.18a-b). Since this toponym predominates at Xochicalco it seems likely that it provides the ancient name of this city (Sáenz 1968: 191; Garza Tarazona 2002). As a result, the references to this place at Cacaxtla may refer to a bellicose encounter between the two sites resulting in the capture of a series of high-standing ritual specialists from Xochicalco (Helmke and Nielsen 2011: 30; Nielsen and Helmke 2015; Nielsen *et al.* 2021). By means of analogy to the way place names were recorded in Aztec codices it seems possible that two additional toponyms can be identified in the corpus of Xochicalco, including one that bears resemblance to Ahuilizapan (Figure 3.18c-d) and another that is similar to Huitzizilapan or Huitzilapan (Figure 3.18e-f) (Berlo 1989: 32-33, 39; Helmke *et al.* 2019: 70, Fig. 10e-f).

In addition, the prominent clay *almenas* (decorative merlons) that once graced the roof of Structure 7 in the palatial acropolis of Xochicalco and which represent fanciful avian figures (de la Fuente *et al.* 1995: 109), undoubtedly served to name the structure that they

Figure 3.19: Naming buildings at Xochicalco.
a) Elaborate *almena* that once adorned Structure 7, representing a descending bird, most likely a quetzal; **b)** drawing of the glyphic medallion on the *tecalli* vase discovered within a cache in the Pyramid of the Feathered Serpent. In this medallion, the quetzal descends upon an early form the **XIW** 'year' logogram (photograph and drawing, by Christophe Helmke).

once adorned (Figure 3.19a).[5] This would follow a practice that can be traced back to Teotihuacan and continued well into the Postclassic.[6] The jagged crest of feathers on the brow and the long sinuous tail feathers on the *almenas* at Xochicalco indicate that these birds were meant to depict the resplendent quetzal (*Pharomachrus mocinno*), alien birds of the cloud forests of eastern Mesoamerica. Most interestingly of all is their attitude, beak below and tail feathers above, indicating these birds are in a diving posture. This combination of features recalls the name of a great mountain recorded in the Maya texts of Palenque, which was named *yehmal k'uk'*, or 'descending quetzal' (see Stuart and Houston 1994: 31, Fig. 34) as well as the accession name of the Aztec ruler Cuauhtemoc (/*k*^{w}*aaw-temoo-ok*/) 'descending-eagle' (León-Portilla 2001) and the headdress of the fire deity Xiutecuhtli that bore a descending cotinga (*Cotinga amabilis*) (Cobean *et al.* 2012: 169; Taube 1992a: 125-126, Fig. 67). These onomastic analogies suggest that a palatial structure at Xochicalco once bore the name 'descending-quetzal house' and finds close correspondences to the glyphic compound represented on the stuccoed travertine bowl found in a cache within the Pyramid of the Feathered Serpent (Figure 3.19b) (Sáenz 1963: 13-21).

As such, whereas much remains to be done in terms of a successful phonetic decipherment of Epiclassic writing and despite the obvious impediments posed by a small corpus, continued work may yield phonetic readings of signs. The comparative approach to Mesoamerican writing systems and initial attempts at semantic decipherments are beginning to bear fruit and each new text discovered greatly assists in the process of decipherment.

Candidate Languages

One of the most rudimentary means of establishing language candidates is to consider the spatial distribution of a given writing system and to compare

[5] The precise structure that these *almenas* were associated with remains unclear, partially due to the fact that these were found amidst structural collapse, but also since Xochicalco appears to have come to a violent end and as a result most of its sculptures, especially those made of clay were destroyed and scattered in antiquity (Garza Tarazona 2010: 18-19). Nonetheless, based on the discovery of many of these fragments in proximity of Str. 7, we surmise that the *almenas* once graced the perimeter of the roof of this structure.

[6] In another study (Nielsen and Helmke 2014) tentative suggestions as to the names of buildings at Teotihuacan were proposed, based on the recognition that representations of *almenas* in writing can function as *pars pro toto* signs for structures as a whole, since these are the most diagnostic element of the typical flat-roofed buildings of the central Mexican highlands (e.g. Margain 1971). As such, any qualifying element added to an almena sign in writing provides the name of a particular structure, whereas the elements associated with actual architectural *almenas* in turn serve to name the buildings that they adorn.

that to the areal distribution of certain language groups. For Maya hieroglyphic writing this approach is highly illustrative, since more than 96.6% of sites exhibiting glyphic texts are found within the Maya heartland, as defined by the maximal distribution of Mayan languages at the time of European contact (e.g. Kaufman 1994).[7] Looking closer at this distribution one can also see that 88.4% of sites with Maya texts are in areas where languages of the greater-Tzeltalan and Yukatekan branches thrived, an observation that has since been independently borne out by epigraphic research (Houston *et al.* 2000; Lacadena and Wichmann 2002).[8] Furthermore, considering also that Aztec writing was predominantly utilized to record Nawatl, one can come to the conclusion that particular writing systems in Mesoamerica were bound to particular language families—an observation that in large measure is also valid for other parts of the world.

On the basis of this premise one can thus examine the distribution of sites exhibiting Epiclassic writing and compare it to the distribution of Mesoamerican languages at the time of European contact in the sixteenth century. In so doing, one can see that the vast majority of Epiclassic sites are found in the Central Nawa heartland, even the sites of Maltrata and Cantona are found in the Eastern Nawa area, in much the same way as Acatlan de Guerrero, which is located in the Western Nawa area. Excluding Chichen Itza as an outlier, the only disturbances to this picture are brought about by the site of Teotenango that is in the midst of the Matlazinca area, whereas Xochicalco is in proximity to the Mazahua and Ocuiltec languages,[9] and El Cerrito is in the middle of the Pame area. As such, two great language candidates emerge for Epiclassic writing, namely an early form of Nawatl, and one or several of the Oto-Pamean languages of the Western Branch of Oto-Manguean languages. Interestingly, this conclusion duplicates earlier efforts wherein basic word order was elucidated by means of structural analyses, yielding comparable results (Helmke and Nielsen 2011: 45-48, 2013b: 422-425).

Nevertheless, we have to recall that the Epiclassic began nearly a millennium before the Spanish Conquest and thus, while this exercise is instructive it is by no means a failsafe way to establish language candidates. Not the least since we know that the central Mexican highlands have witnessed a high degree of population movement and linguistic interactions in antiquity and that the area is a borderland between several prominent language families. As a result, it could very well be that the whole of the Epiclassic area was once populated by peoples speaking a group of closely related Oto-Pamean languages, keeping in mind that most linguists consider Nawatl to be an intrusive language that arrived later on the scene, although the chronology is still the subject of thorny debates (see Dakin 2003; Davletshin 2012; Hill 2001; Kaufman 2001; Nielsen and Helmke 2011: 345-349). Assessing the geographic distribution of languages stratigraphically it seems patent enough that Nawatl is a later addition and resembles a wedge, driven between the Western and Eastern Oto-Manguean languages. Considering the great time-depth of the separation between the two branches one is left to wonder whether Nawatl could have been in Mesoamerica at such an early date and that its arrival and propagation were directly responsible for the great division of the Oto-Manguean languages.

Recent work on Epiclassic writing has also begun to identify regional scribal practices and we are now in position to be able to suggest that there was an eastern and a western variant. It is unclear whether this variation is brought about by the writing system being used by two different languages of the same family, or dialects of the same language. The latter seems plausible since the differences are on par with the dialect differences identified for Classic Maya texts (Lacadena and Wichmann 2002). For the Epiclassic we can note the difference by which year bearers were marked, since the convention of appending small tumplines to named days in the *toonalpoowalli* is restricted to sites in the western area, including Xochicalco, Tetlama, Teotenango and the Cerro de la Estrella, but is not found at Cacaxtla, nor Tula (see Caso 1962: 71-73; Helmke and Nielsen 2011: 13-15, 2013b: 394-397; Nicholson 1966). In addition, one can note the different names attributed to some of the days, including the "foot" sign (Glyph K) that is found in the west and which may well substitute for the day sign 'dog' seen at Cacaxtla, which is conspicuously absent from the western Epiclassic sites. In much the same way the day sign 'rabbit' is well attested in the west, but in the east one finds a halved star sign (see Helmke and Nielsen 2011: 9, Fig. 2l). Thus, whereas these features are few and subject to sampling, these are consistent in their distribution, suggesting isoglosses bundling around Cacaxtla, Tula and El Cerrito as representatives of an eastern Epiclassic regional tradition and segregated from the western Epiclassic sites (see Figure 3.1). That these areas follow and are partially defined by a prominent physiographic feature, the Sierra Madre Oriental, is all the more suggestive since it is precisely along

[7] This figure thereby excludes the sites of El Salvador and eastern Chiapas, as well as central Mexican sites of Teotihuacan, Tula and Cacaxtla as well as the four Costa Rican findspots, namely, Bagaces, Las Huacas, La Fortuna and Talamance de Tibás.

[8] This figure implies that only 8.2% of all sites with Maya glyphs are located in the Maya highlands.

[9] Speaking of the transition from the fall of Teotihuacan to the rise of the Epiclassic city-states, the eminent American linguist Terrence Kaufman (2001: 7) has stated "The Valley of Toluca and Xochicalco probably had Matlatzinka-Tlawika occupants". While this is indeed the general view held by many in the area today, aside from the assertion itself, no empirical data has been offered in support of this claim (cf. Kaufman and Justeson 1998).

such natural barriers that dialectal variations tend to develop.

Returning to the question of language candidates, we are actually quite fortunate to have certain glyphic elements that appear to reflect linguistic elements. First among these is the positioning of the numeral qualifiers that accompany calendrical notations and other expressions, including titles. In Epiclassic writing these are consistently written below, in keeping with the convention devised at Teotihuacan, as well as reflecting the practice of contemporary and earlier texts of Oaxaca (although in the latter case dots appear above bars, rather than below). The practice of writing numerals below day signs can in fact be traced back to a Middle Formative example rendered on an incised ceramic vessel from Tlapacoya in the central Mexican highlands (Niederberger 1987: 551, 2000: 186, Fig. 9b), demonstrating the antiquity of this scribal practice. This stands in contrast to the numerals used in Isthmian and Maya script that are usually represented in front or above, in keeping with the syntax of Mije-Sokean and Mayan languages wherein numbers precede the noun that they qualify (Justeson *et al.* 1985: 40-42). Thus, if the Epiclassic calendrical notations reflect the basic word order of a particular language then one must conclude that these texts record an Oto-Manguean language, since these are the only languages in Mesoamerica wherein numerals can follow the item the qualify without affecting a semantic change, or entailing a shift from cardinal to ordinal function (Justeson *et al.* 1985: 40, 42, 45-46; Morales Lara 2006: 51-52).

However, the 16th day sign of the *toonalpoowalli*, 'vulture' is written at both Xochicalco and Tetlama with the head of an eagle wearing a necklace (see Figure 3.8). This spelling immediately recalls the Nawatl name for this day, which is *koska-k^{w}aawtli* 'necklace-eagle' an endocentric compound for 'vulture' (Broda de Casas 1969: 13; Thouvenot 1987: 349-350). Whereas it is possible that a similar construction existed in an earlier Oto-Pamean language, review of the modern languages make it clear that 'eagle' and 'vulture' are designated by discrete terms and that neither involve a lexeme for 'necklace' or 'jewel'. The Otomí and Matlatzinca names for the 16th day, are another point of departure, since they involve the lexemes 'sun' or 'god' and are unrelated to the Nawatl terms (Caso 1967: Cuadro IX, 219-221, 228-229). Similarly, the "foot" glyph of western Epiclassic writing, which may represent the 10th day and substitute for 'dog' in eastern Epiclassic writing, may involve a rebus that cues one of the known day names. Based on present evidence, however, it seems that Nawatl, Oto-Pamean and even Mayan languages all agree as to the identity of the 10th day, since all name it 'dog' (Caso 1967: Cuadro IX, 219, 228-229). The near equivalence between *ok* 'wild dog, coyote' and *ook* 'foot' in Classic Mayan is remarkable in this instance (Kaufman 2003: 349-350, 597), and early examples at Tikal (Bu. 48 and Stela 31) (Shook and Kidder 1961) show the head of a feral dog, in an outline that resembles a human leg. Another comparable example involves the 8th day, known as 'rabbit' in central Mexico that makes numerous appearances in western Epiclassic writing, but being glaringly absent in the eastern tradition. Instead, at Cacaxtla, we see a halved star sign, as though setting at the horizon and thereby serving as a close analogue to the 8th day sign of Maya writing, read as *lamaaht* 'diminishment, descent', which is also represented by a star, at times partially hidden behind a stylized eyelid (Helmke and Nielsen 2011: 8, 9, Fig. 2l, 50 n. 5). These examples help to align the day signs of Epiclassic writing and draw equivalences to day signs of Maya writing, although we suspect that these reflect local traits, outside of and unmotivated by a Maya linguistic environment.[10]

Still other rebuses may be found in other day signs, such as the use of a loincloth as the main diagnostic element of the day sign nicknamed "Glyph A" (Caso 1962: 60-61; Taube 2011: 82-84), the use of the "shallow basin" sign with certain calendrical notations and toponyms (see Helmke and Nielsen 2011: 20-22, 2013b: 401-403) and the "twisted root" sign with place names (Taube 1992b: 69-70, Fig. 13, 2000: 9; Nielsen and Helmke 2008: 461). Since rebuses can only be resolved in one particular language it is hoped that the examples just enumerated will be the focus of future research and may one day be resolved, thereby providing a solid candidate language, in much the same way as structural analyses have been used to identify basic word order (see Helmke and Nielsen 2011: 44-48, 2013b: 422-425), thereby providing encouraging leads.

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[10] As such, it bears remembering that the day names that are available for study were recorded after the Spanish conquest and it is entirely possible that Oto-Manguean calendrical names changed under Aztec influence (such as is seen in the names of the months in Otomí that appear to be literal translations from Nawatl) and conversely that Nawa-speakers could have calqued certain day names from earlier Oto-Manguean ones (see Caso 1967: 222-224).

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Chapter 4:
What happened to TLATOANI and *tlăhtŏhkĕh*? Three classes of signs and two types of spellings in Nahuatl hieroglyphic writing

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<In tlatoanj, cenca tetlaoculianij, cenca teicnoittanj, ioan teicnelianj>
'A king is very indulgent of others, very merciful, and kindly to people.'
(*Florentine Codex*, Book 8: Chapter 17, §6)

Thanks to many fortunate circumstances, a number of documents containing Nahuatl hieroglyphic writing have survived to the present. The size of the corpus is difficult to estimate; it continues to grow owing to new findings in archives and private collections. There are hundreds of the so-called codices painted on indigenous or European paper and hide of the Early Colonial period, along with dozens of monumental inscriptions carved in stone and a few short texts incised on portable objects. Some codices are lengthy, including up to several thousand hieroglyphic compounds, each one consisting of one or more signs. Hereinafter I will use the word "spelling" in a technical sense as a term meaning 'a combination of signs used to write a word', regardless of whether the signs under discussion are logographic, syllabic or alphabetical. Knowledge of the script did not survive the Colonial period. Fortunately, its decipherment in a broad sense of the word was relatively straightforward owing to the many glosses and parallel texts in Latin writing, at times transcribing the glyphs in Classical Nahuatl, or providing translations in Spanish. Thanks to this, already in the 1800s, Joseph Marius Alexis Aubin (1849, cited after the 1885 edition) and Manuel Orozco y Berra (1880) were able to present phonetic readings and interpretations for a colossal amount of syllabic and logographic signs.

Many issues regarding the mechanics of the original system remain unresolved, with one of these drawing considerable attention in the scholarly works of the twenty-first century. The script is highly pictorial and seems to be obligatorily combined with iconography; there is a consensus that lineal texts are generally unattested in the documents. Some scholars suggest that every single image in the codices was intended to be read phonetically (Galarza 1996). Others believe the codices to be a kind of "semasiographic" system without recourse to words, intrinsically interpretable in any number of languages (Boone 1994, 2000: 31). The idea that phonetic signs in the strict sense did not exist and that phonetic readings of painted images were created ad hoc during the process of writing is somewhat close to the model of a writing in the broad sense (Prem 1967; cf. Whittaker 2009). Another proposal is that the iconography and the logosyllabic writing were always combined and that the iconography was conventionally interpreted but not read phonetically, whereas the script was only used in captions to clarify the nearby images, supplying specifications such as personal names, place names and dates (Lacadena 2008: 28; Nicholson 1973: 2-3; Prem 1992: 53). Such captions are to be read phonetically and thus supply a kind of information that cannot be depicted—or with great difficulty. This approach implies that only hieroglyphic spellings are supposed to include phonetic complements, be substituted for syllabic signs and accompanied by consistent glosses in Latin writing. In this paper, I want to offer an alternative model, which as far as I know has not been proposed for the description of Nahuatl writing. We can consider codices to be a combination of three different systems of communication: hieroglyphic writing intended to be read linguistically, iconography intended to be interpreted broadly and pictorial systems of notation intended to be vocalized conventionally. From this, it follows that a notation is a collection of related visual symbols that are each given an arbitrary reading value in the system, used to represent technical facts and developed to facilitate structured communication within a certain domain of knowledge, such as numerals and road signs (cf. Daniel and Bright 1996: 785). Phonetic writing and notations both depend on the language for which these are developed, although notational systems allow for a great deal of extralinguistic structuring; iconography is independent and can be interpreted in any language. Here, the term "extralinguistic structuring" refers to the cases such as when numerals are represented by the corresponding number of dots or to the cases

when a "Flag" stands for 'twenty' and a "Half White and Half Black Flag" stands for 'ten': nothing in the shape of numerals in Nahuatl suggests that 'ten' is a half of 'twenty', for the words 'flag' and 'twenty' do not resemble each other (Davletshin and Lacadena 2019; see also Díaz, this volume).[1] It should be stressed that I intentionally restrain from the practice to give descriptions of the signs in Nahuatl because reading values of signs are not determined by the objects these depict. For example, the sign "Flag", in Nahuatl *pāntlĭ*, also possesses the reading values **POWAL**, 'twenty', and **pa** among others.[2,3,4] Importantly, it is impossible to prove that such-and-such image was called in a certain way in Classical Nahuatl; the reading value of a sign, however, can be formally established and proven.

I will start the discussion with an intriguing question, why neither a logogram for *tlăhtŏānĭ* 'king', nor a syllabic spelling of the word have yet been recognised in hieroglyphic texts. I will proceed with some examples of the Nahuatl script that can be interpreted as lineal texts. Based on these examples, I will suggest that the element that represents a "Throne" is a notational sign read **TLATOANI** and will argue in support of this reading by means of the examples from several hieroglyphic documents. In the conclusion, I will discuss some of the implications of this finding.[5]

Titles in the Nahuatl Hieroglyphic Script

A title in a broad sense is a word or an idiomatic expression used in association with a personal name, either before or after it. It signifies the social status of a person, indicating their access to the power, their professional occupation or membership to a certain social class, for example, a certain sex-age group. Cross-culturally, the use of titles is persistent and prolific, particularly, in pre-industrial societies; titles can even replace personal names in certain contexts in many cultures. It therefore comes as no surprise that titles are always found in ancient scripts. In fact, one can speculate that the absence of titles in a hypothetical decipherment is an indication of its fallaciousness.

Many titles are found in the Nahuatl script; some of them are rare and others are of Spanish origin: these latter appear in the documents dealing with colonial administration. Titles combine with personal names and are sometimes connected to depicted personages with a thin black line. This "solid black line" functions as a sort of punctuation sign in Nahuatl writing, connecting sign groups and syntactic units, as can be seen from the examples under discussion below. I use the equal sign "=" to indicate "black lines" in transliteration. Here I offer some examples of Nahuatl hieroglyphic titles.

The sign **TEK^{W}** LORD depicts a "Pointed Diadem", frequently as "Head of Hair in Pointed Diadem" or "Head in Pointed Diadem" (Figure 4.1).[6] It is a turquoise diadem and it is painted blue in many codices, which is called *xĭwtzŏntlĭ* 'turquoise headwear' in Nahuatl (*Primeros Memoriales*, 51 *verso*), see also *xĭwwitzollĭ* 'turquoise pointed thing' (*Florentine Codex:* Book 6, Chapter 9, 11). The reading value of the sign was already known to Aubin (1885: 45) and recently David Stuart (2012) wrote on its decipherment, establishing its reading value, in a paper dedicated to the signs for 'lords' and 'kings' in Mesoamerican scripts. Lords and rulers are depicted wearing this diadem and are sometimes identified as <teuctli> or <tectli> in the glosses (*Codex Mendoza*, folio 68r, see Figure 4.1a). The sign "Diadem" is also attested as part of many personal names and toponyms, such as "Rat Trap"-"Diadem"-"Noseplug"-"Scroll", **mo-TEK^{W}-(so)-SOMA**, *mŏtēk^{w}sōmăh*, the name of the last ruler of Tenochtitlan, literally, 'He Frowns in Lordly Manner' (on the Aztec Calendar Stone in the National Museum of Anthropology in Mexico City) (Figure 4.1b); "Diadem"-"House", **TEK^{W}-KAL,** *tēkkălkŏ,* <tecalco.pů>, a place name, literally, 'At the Palace of Justice' (Figure 4.1c), and "Diadem"-"Field", **TEK^{W}-MIL,** *tēkmīlkŏ,* <tecmilco.pů>, a place name, literally, 'At the Royal Fields' (Figure 4.1d); the latter two examples are drawn from *Codex Mendoza*,

[1] I use iconic formulae as descriptive nicknames to identify graphic designs. These are provided in double quotation marks ("..."), whereas translations are rendered in single quotation marks ('...'). It is important to emphasise that the nickname "Bird" does not mean that the sign is intended to be read as 'bird' in Nahuatl, only that the sign depicts a bird (Davletshin 2017).

[2] I use a macron (¯) to indicate long vowels, a breve (˘) – short ones and an aitch (h) – glottal stops. The absence of macrons means that vowel length and glottalisation cannot be reconstructed due to the lack of secure data (for lexical sources on Classical Nahuatl see: Karttunen 1983, *Gran Diccionario Náhuatl* 2022, and Wimmer 2022; for grammatical descriptions: Carochi 2003; Andrew 2003; Launey 2011). Otherwise, I use the widely established orthography of Classical Nahuatl, which is a version of the American Phonetic Alphabet. The symbols that differ from the International Phonetic Alphabet symbols are the following: h = /ʔ/, x = /ʃ/, tz = /ʦ/, ch = /ʧ/, tl = /t͡ɬ/ and y = /j/. Long consonants are indicated by doubled letters. These are not phonemic in Classical Nahuatl and result from juxtaposition of identical consonants or simplification of consonant clusters (Andrew 2003: 33-34).

[3] In transliterations, I follow conventions established in Mesoamerican epigraphy (Fox & Justeson 1984; Lacadena 2008). The reading values of signs are separated by hyphens and rendered in bold typeface; word-signs (logograms) are given in uppercase and phonetic signs (syllables) in lowercase. A blank space indicates boundaries between two hieroglyphic spellings (*i.e.* two sign groups or compounds). Phonetic and lexical complements are provided in parentheses (...). Glottal stops, short and long vowels are not indicated in transliterations.

[4] Transcriptions are given in italics; these show how spellings are intended to be read aloud. Glosses in Latin characters are given in angled brackets <...>, e.g. "Hand"-"Netted Cradle" **(ma)-MATLAWAKAL** <a^{q}l. matlahuacal.>, *mātlăwakal* '(He of) Netted Cradle', see the *Codex Santa Maria Asunción*, folio 27v (Williams 1997).

[5] The research presented in this chapter was prepared in conjunction with the Copenhagen Roundtable of 2020, and thereby represents the current state of knowledge as of that year.

[6] I indicate lexical readings of word-signs in English, in capitals.

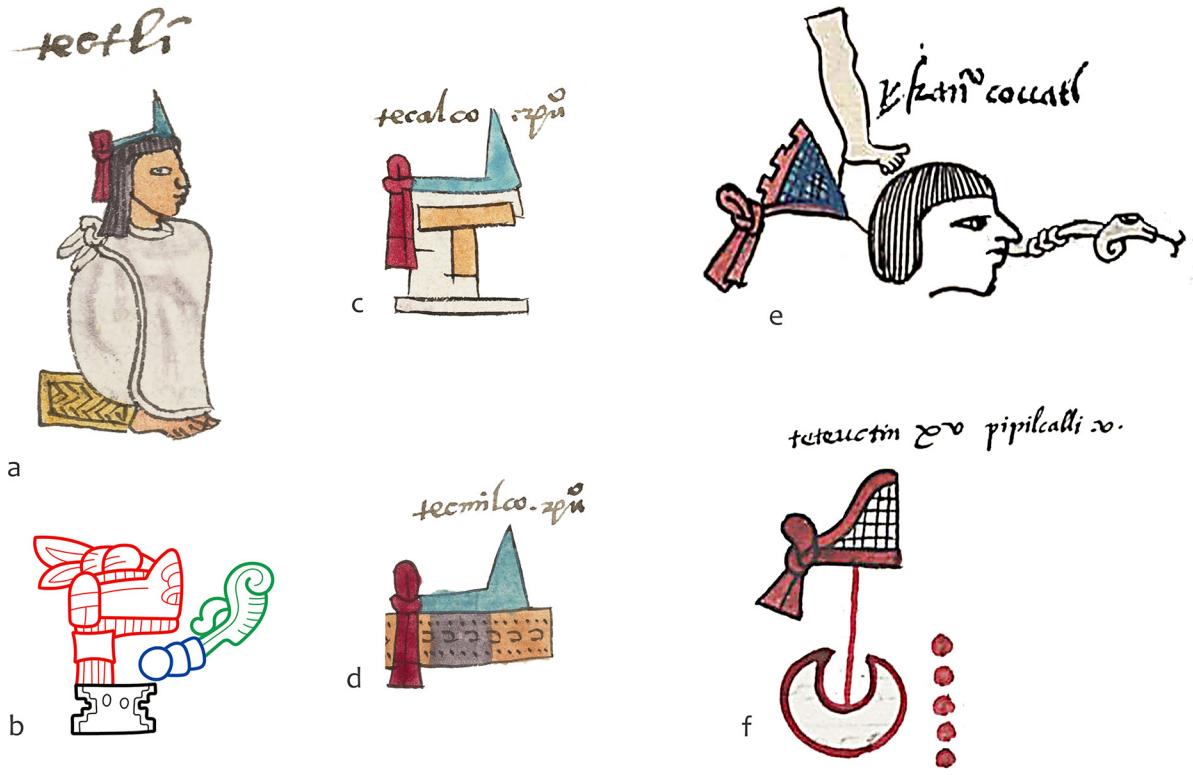

Figure 4.1: The "Pointed Diadem" sign, **TEK^{W}** LORD in Aztec hieroglyphic writing. **a)** A lord wearing a pointed diadem with the gloss <tectli> 'lord' (*Codex Mendoza*, folio 68r). **b)** "Rat Trap"-"Diadem"-"Noseplug"-"Scroll", **mo-TEK^{W}-(so)-SOMA**, *mŏtēk^{w}sōmăh*, a personal name, literally, 'He Frowns in Lordly Manner' (Aztec Calendar Stone, Museo Nacional de Antropología, Mexico City; drawing by Albert Davletshin, colours identify the different signs). **c) TEK^{W}-KAL,** *tēkkălkŏ,* <tecalco.pů>, a place name, literally, 'At the Palace of Justice' (*Codex Mendoza*, folio 20v). **d) TEK^{W}-MIL,** *tēkmīlkŏ,* <tecmilco.pů>, a place name, literally, 'At the Royal Fields' (*Codex Mendoza*, folio 41r). **e)** "Head of Man" = "Snake" = "Diadem"-"Leg", **KOA-TEK^{W}-...** <fran^{co} couatl>, *kōātl tēk^{w}tlĭ ...* 'Serpent (a personal name), the lord of ...' (*Matrícula of Huexotzinco*, folio 699v). **f)** "Crescent" = "Diadem", **TEK^{W} = KAXTOL**, <teteuctin xv>, *tētēk^{w}tĭn kăxtōllĭ,* 'fifteen lords' (*Matrícula of Huexotzinco*, folio 696r). Glyphs from the *Codex Mendoza*, Bodleian Library MS. Arch. Selden. A. 1 © Bodleain Libaries, University of Oxford. Glyphs from the *Matrícula of Huexotzinco* from Gallica © Bibliothèque Nationale de France. Reproductions under Creative Commons license CC-BY-NC 4.0.

folios 20v and 41r.[7,8] It is impossible to give arguments for the reading values of all the signs in this paper due to lack of space, but many are presented elsewhere (e.g. Aubin 1885: 33-45; Lacadena 2008; Whittaker 2009). In the *Matrícula de Huexotzinco*, on the verso of folio 699, the sign appears joined by a "black line" to the sign "Head of Man". In two cases, another sign is attached to the sign "Diadem", probably, indicating that the person was the 'ruler of such-and-such place' (Figure 4.1e). The sign is combined with the number **15** and annotated as <teteuctin XV> 'fifteen lords' in the same document, folio 696r (Figure 4.1f).

Some rare titles are attested in the *Codex Mendoza* (folios 17v, 18r, 65r, and 68r). They denote important political officials, whose functions are but vaguely understood. These titles are written with two or more logograms, sometimes with syllabic signs (Figure 4.2). I will give a few examples from folio 18: "Head of Man with Earplug"-"Diadem", **TLAKA-TEK^{W}**, *tlākătēk^{w}tlĭ*, literally, 'lord of men', <tlacatectli.governador>; "Head of Man" "Dart"-"Diadem", **? TLAKOCH-TEK^{W}**, *tlakochtēk^{w}tlĭ*, literally, 'lord of darts', <tlacochtectli.governador>, and "Head of Man"-"Snake"+"Mirrors", **? TESKA-KOA**, *tēskăkōākătl*, literally, 'one of mirror serpent', <teʒcacoacatl.governador> (Figure 4.2a-c). The title *sīwăkōātl*, literally, 'she-serpent' is also written with two logograms – "Snake"-"Head of Woman", **SIWA-KOA** (*Codex Mendoza*, folio 2v) (Figure 4.2d). Many titles indicating professional occupation and sex-age groups are found in hieroglyphic censuses (Herrera M. and

[7] My proposal of the reading **SOMA** ANGER as presented in 2011 (at the Workshop "Amerindian Scripts in Comparative Perspective", the 16th European Maya Conference in Copenhagen). It was based on the following observations. Firstly, the sign "Scroll" is attested as part of the hieroglyphic names *Mŏtēk^{w}sōmăh* 'He is Angry/Frowns in Lordly Manner' and *Tēsosōmŏk* 'He Makes People Angry (a lot)'. Secondly, in the Nahuatl script different grammatical realisations of a verbal root are frequently written by one sign and as a result reduplications are underrepresented if a logogram is used. The design "Volute (of Speech)" can be interpreted as "Volute (of Anger)"; much as "puffs of steam" are used to depict anger in modern comics.

[8] In Nahuatl, labialized velars *k^{w}* lost labialization and become *k* if are followed by labial nasals *m* or velar stops *k*.

Figure 4.2: Aztec titles written by combinations of logographic signs. **a)** "Head of Man with Earplug"-"Diadem", **TLAKA-TEK^{W}**, *tlākătēk^{w}tlĭ*, an official, literally, 'lord of men', <tlacatectli.governador>. **b)** "Head of Man" "Dart"-"Diadem", **? TLAKOCH-TEK^{W}**, *tlakochtēk^{w}tlĭ*, an official, literally, 'lord of darts', <tlacochtectli.governador>. **c)** "Head of Man"-"Snake"+"Mirrors", **? TESKA-KOA**, *tēskăkōākătl*, an official, literally, 'one of mirror serpent', <teʒcacoacatl.governador> (*Codex Mendoza*, folio 18r). **d)** "Snake"-"Head of Woman", **SIWA-KOA**, *sīwăkōātl*, an official, literally, 'she-serpent' (*Codex Mendoza*, folio 2v). Glyphs from the Codex Mendoza, Bodleian Library MS. Arch. Selden. A. 1 © Bodleain Libaries, University of Oxford. Reproductions under Creative Commons license CC-BY-NC 4.0.

Thouvenot 2015; Prem 1974; Williams and Hicks 2011: 26).

The presence of Spanish titles and Spanish personal names in Nahuatl hieroglyphic writing was recognised long ago (Arreola 1920; see also Barlow 1944, cited after Barlow 1989; Valle 1994a: 157-160, 1994b, 2006). Spanish titles are frequently written by syllabic signs because logographic signs for words of Spanish origin were evidently unavailable in the pre-contact script. Five titles of this type are relatively frequent (Figure 4.3a-e): "Bird", **to**, *ton*, 'Sir', from the Spanish *don*; "Flag", **pa**, *pay*, 'Brother', from Spanish *fray*; "Eye"-"Liver"-"Bean" **ix-el-e**, *ixeley* (*eleyix*?), 'Viceroy', from Spanish *virrey*; "Bird"-"Reed", "Bird"-"Reed"-"Rubber Ball", **to-TOL-(ol)**, **to-TOL**, *totol*, 'Doctor', from Spanish *doctor*, and "Patolli Beans", "Flag"-"Reed"-"Patolli Beans", **PATOL**, **(pa-TOL)-PATOL**, *patol*, 'Agent', from Spanish *factor*.[9] Here, *pătōllĭ* is the name of a game where beans or stones were thrown as dice (*Florentine Codex*: Book 8, Chapter 8).

The excessive complementation and phonetic use of logograms were intended to help the reader recognise the correct pronunciation of odd foreign words. These hieroglyphic spellings show how Spanish phonetics were adapted to the phonological system of Classical Nahuatl: voiced stops were borrowed as voiceless ones (*d* as *t*), bilabial fricatives as stops (*f* as *p*), rhotics as laterals (*rr* and *r* as *l*) and consonant clusters were simplified (*kt* as *t*, *fr* as *p*). Syllable-final consonants are systematically underrepresented in Nahuatl syllabic spellings (Lacadena 2008). The title 'viceroy' is securely identified by Spanish glosses but the reconstruction of its reading presents some difficulties. We can assume, for example, that *eleyix* is derived from the plural form <virreyes> borrowed as a singular with the abbreviation of the first syllable <vi>, an irregular reflex of the last vowel *e* as *I*, and the synharmonic prothetic vowel which is regularly inserted before the word-initial lateral *l* because laterals are banned in this position in Classical Nahuatl.

Fortunately, two relatively rare titles written by means of logograms can be identified, but only with rather approximated phonetic readings (Figure 4.3f-g): "Hand with a Staff", **xiwes*, 'Judge', from Spanish *juez* and "Bald-headed Spaniard", **oyitol*, 'Magistrate', from Spanish *oidor*. I was able to locate the last sign only in the *Codex Tlatelolco*, where glosses in Latin characters are absent. Thus, these proposals remain somewhat tentative. Nevertheless, the personages with this title are identified by their hieroglyphic names and known to have been *oidores* in other sources (see Barlow 1989; Valle 1994b).

[9] The logograms **PATOL** and **TOL** are used as phonetic signs in the examples under discussion.

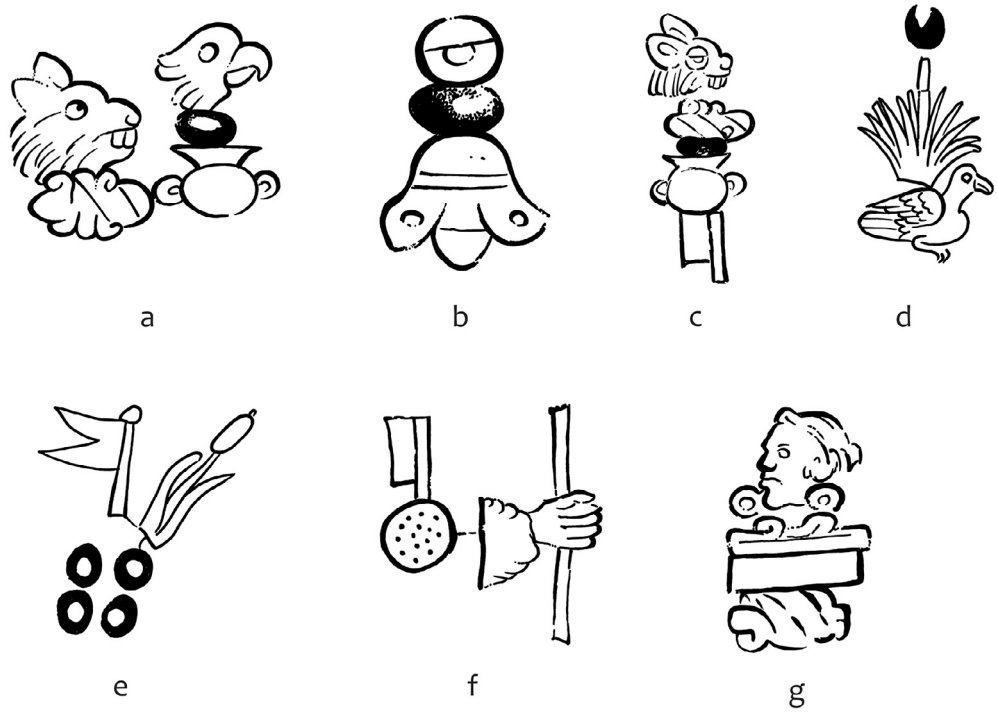

Figure 4.3: Spanish titles in Aztec hieroglyphic writing.
a) "Bird"-"Bean"-"Pot" = "Stone"-"Gopher", **to-e/ye-ko te-TOSAN**, *ton yeko tetosa*, 'Don Diego de Mendoza'; the pretonic syllable *men* is elided. **b)** "Eye"-"Liver"-"Bean" **ix-el-e**, *ixeley* (*eleyix*?), 'Viceroy', cf. Spanish *virrey*. **c)** "Flag"-"Bean"-"Pot"-"Stone"-"Gopher", **pa-e/ye-ko te-TOSAN**, *pay yeko tetosa*, 'Fray Diego de Mendoza' (*Codex Tlatelolco*, Sheets II, III and VI). **d)** "Bird"-"Reed"-"Rubber Ball", **to-TOL-(ol)**, <eldotor>, *totol*, 'Doctor (Antonio Rodríguez de Quesada)'. **e)** "Flag"-"Reed"-"Patolli Beans", **(pa-TOL)-PATOL**, <elfator>, *patol*, 'Agent (Gonzalo de Salazar)' (*Memorial de los indios de Tepetlaoztoc*, folios 44v and 32v). **f)** "Hand with a Staff" = "Loaf of Salt"-"Flag", **XIWES? = ISTA-pa**, <juez.dō.estevan deguʒmā.>, *xiwes istapan*, 'Judge Esteban (de Guzmán)' (*Codex Aubin*, folio 77r). **g)** "Bald-headed Spaniard"-"Stone"-"Brick"-"Water", **OYITOL?-te-xa-a**, *oyitol*? *te xaha*, 'Magistrate de Quesada', the pretonic syllable is elided and the poststressed dental is weakened to a glottal stop (*Codex Tlatelolco*, Sheet II)
(drawings by Christophe Helmke).

Intriguingly, the title for the holder of the supreme office in the Aztec society *tlăhtŏānĭ* 'king, ruler', is never rendered besides the illustrious rulers that are so often depicted in the codices. The word literally means 'one who says things, one who speaks'. It is based on the transitive verb stem *-htōă* 'to say (something)' and translated in Colonial dictionaries as '*hablador o gran señor, rey, gobernador*': *tlăhtŏānĭ* is the free singular form, *tlăhtŏhkĕh* the free plural, *-tlăhtŏhkāw* the possessed singular and *tlăhtŏhkā-* is the compounding form (cf. Karttunen 1983). The absence of this title in the codices is all the more notable if we consider that many documents relate the glorious deeds of the *tlăhtŏhkĕh*. It is remarkable that rarer and less important titles such as *sĭwākōātl*, *tēkʷtlĭ* and *patol* are attested in the script. Personally, I have been wondering for years why the title 'king' is not attested in the script and how the word *tlăhtŏānĭ* might be written by means of Nahuatl signs. The absence of this title would constitute a salient omission.

Linear Texts in the Nahuatl Hieroglyphic Script

There seems to be a general consensus that lineal texts are not attested in Nahuatl documents, in other words, combinations of signs that refer to linguistic units longer than a personal name, a date or a place name are absent. Nevertheless, such examples can be found in the codices even though they cover an insignificant percentage of recorded instances.

The so-called *Codex Xolotl* is a set of ten cartographic compositions and three fragments in the collections of the Bibliothèque Nationale de France in Paris (BnF). These maps are embellished with topographic details, scenes of people, animals and plants, personal names, place names and dates. These narrate the history of the Texcoco kingdom before the arrival of Europeans in details. Documents of this kind were relatively common in Central Mexico and can be characterized as cartographic histories (Boone 2000: chapters 6

Figure 4.4: Hieroglyphic spellings of direct speech.
The king of Askapotzalko, "Loincloth", **MAXTLA** *Māxtlă* speaks: "Arrow"-"Coyote Head"-"Penance Collar", **mi-NESAWAL-KOYO**, *[xĭk]mĭ[ktĭă] nĕsāwălkŏyōtl*, 'Kill Nesawalkoyotl!' "Stone"-"Flag", **te-pa**, *tĕpanēkătl* speaks back to *Māxtlă*: "Deer Hoof" "Coyote Head"-"Penance Collar", **CHOLO NESAWAL-KOYO**, *chŏlŏh nĕsāwălkŏyōtl*, 'Nesawalkoyotl escaped' (*Codex Xolotl*, Map 9, E4-E5 © Bibliothèque Nationale de France).

and 7; Helmke *et al.* 2019). There are few glosses in Latin characters but the content of the document is (relatively) well-understood thanks to the excellent study implemented by Charles Dibble (1951, cited below after Dibble 1980; see also Lesbre 2016; McGowan and Van Nice 1979; Thouvenot 1987, 2005). Dibble's work is based on the detailed comparison of the codex with the historical works of Fernando de Alva Ixtlilxochitl and Juan de Torquemada's *Monarquia Indiana*.

At the bottom of Map 9 (E4-5), a king is depicted, sitting on a "woven throne with backrest" (Dibble 1980: 110-111). Such thrones are described as *tĕpŏtzŏhĭkpălli* 'seats with backs' (*Primeros Memoriales*, 51 *verso*). Below the throne is the sign of "Anthill", **ASKAPOTZAL**, and the sign of "Loincloth", **MAXTLA**, is attached by a black line to the king's neck (Figure 4.4). These glyphs allow us recognise *Māxtlă*, the personal name, literally, 'Loincloth' of the famed king of *Āskăpōtzălkŏ*, and the name of the city where he ruled, literally, 'At the Anthill'. The king speaks to his subject who is identified as a *tĕpanēkătl* by two syllabic signs "Stone" and "Flag", **te-pa**. This agrees with the fact that Nahuatl-speaking *tĕpănēkăh* lived at Askapotzalko. Three signs are attached to the speech volute coming out from Maxtla's mouth "Arrow"-"Coyote Head"-"Penance Collar", **mi-NESAWAL-KOYO**, *[xĭk]mĭ[ktĭă] nĕsāwălkŏyōtl*, 'Kill Nesawalkoyotl!' It is known that Maxtla tried to assassinate the king of Texcoco Nesawalkoyotl, whose name literally means 'fasting' or 'hungry coyote'. Three syllables of the verb *xĭkmĭktĭă* are abbreviated; all three are grammatical markers. This kind of abbreviation is a consistent feature of Nahuatl hieroglyphic writing (Davletshin 2021). The signs are tiny; this fact might have contributed to their abbreviation. The "footprints" go upwards to Nesawalkoyotl's palace at Sillan, indicating that the Tepanek person went to perform his task and returned unsuccessfully at the bottom of the scene on the right.[10] He replies to Maxtla with three glyphs that can be described as "Deer Hoof" "Coyote Head"-"Penance Collar", for **CHOLO NESAWAL-KOYO**, *chŏlŏh nĕsāwălkŏyōtl*, 'Nesawalkoyotl escaped'.[11] According

[10] Two Tepanek in front of Maxtla are depicted similarly and labeled with identical captions. Unfortunately, their footprints do not allow us to see clearly whether they represent one person or two. I opt for the former interpretation.

[11] The reading value **CHOLO** FLEE, RUN for the sign "Deer Hoof" can be proven on the basis of the examples **a/A-CHOLO** <atlicholoyan

to the contents of this page as reported by Alva Ixtlilxochitl, Nesawalkoyotl cleverly escaped his death with the help of his companion Koyowa.

We can see from this scene that Nahuatl writing permitted the scribe to consistently write sentences, even if these are short ones. The reading values of all the signs under discussion are well established and corroborated by many contexts from other documents with glosses in Latin characters. Short and relatively long sequences of signs are connected to speech scrolls in the *Codex Xolotl*. It is important to stress that Dibble understood the meaning of these passages and many others quite well.[12] However, he did not try to read these signs in the strict sense of the word but analysed them iconographically. Lack of space does not allow us to discuss other similar examples from the *Codex Xolotl*.

The so-called *Códice en Cruz* is one of the most remarkable painted annals, *sĕxxĭwāmătl* 'year-by-year books', which have survived up to our time. It is also housed at the Bibliothèque Nationale de France in Paris and demonstrates affinities to both Texcoco and Tenochtitlan scribal schools from a palaeographic point of view. This large assemblage of folded *āmătl* paper records historical events, such as the succession of rulers, wars, famines and post-contact events of the fifteenth and sixteenth centuries. The few glosses in Latin characters are later additions, but the content of the document is (relatively) well-understood thanks once again to another excellent study by Dibble (1981). His work is based on the detailed comparison of the codex with the documents written in both Classical Nahuatl and Spanish, both in Latin characters and Nahuatl hieroglyphic writing.

In the *Códice en Cruz*, the course of history is represented as a sequence of years organised in three cycles of 52 years, each divided into quarter sections of 13 years. At the bottom of the paper the years are recorded, each labelled according to the name of the day on which these years start in the 260-day calendar, *tōnălpōwăllĭ*, 'count of days': '1 Rabbit', '2 Reed', '3 Flint', '4 House', '5 Rabbit', and so on. These names consist of the numbers 1 to 13 and four 'day symbols' *tōnăllĭ*, called year-bearers ('Rabbit', 'Reed', 'Flint' and 'House'; see Díaz, this volume as well as Helmke and Nielsen, this volume). Twenty day signs are known, but only four of them can appear on the first day of a year, due to the permutations of the calendar. The events recorded appear above the corresponding year name. Sometimes the column above the year was left blank; in such cases Nahuatl annals in Latin characters give the phrase *ăhtlĕh mŏchīwă* 'nothing happened' (Dibble 1981: 4). Let us have a look at the beginning of the document (Figure 4.5).

The first story begins with the year *sē tōchtlĭ* '(named after the day) 1 (and) Rabbit', which corresponds to AD 1402. In the *Códice en Cruz*, the numerals from 1 to 13 are written as the corresponding number of circles or dots. Thus, the sign "Circle" stands for **SE** and the sign "Rabbit Head" for **TOCH**, resulting in the spelling **SE TOCH** *sē tōchtlĭ* '(the year of the day named) one (and) rabbit'. The absolutive suffixes *-tl, -tlĭ, -lĭ, -tĭn, -ĭn* and *-mĕh* are systematically underrepresented in the script, better to say, logograms for nouns possess two reading values, one of which corresponds to the free form of a word with an absolutive suffix (*tōch-tlĭ*, also *tōch-ĭn*) and the other – to the bound one (*tōch-*).[13] At the base of the column, corresponding to this year is a craggy mountain surmounted by a 'pot', *kōmĭtl*. This is the spelling of the place name *Tĕtzkŏhkŏ*. The "Craggy Mountain" can be interpreted as an image of the 'alabaster stone', *tetzkaltĕtl*, which provides the phonetic reading **TETZ** according to the principle of clipped readings; however, the sign is not attested in other contexts and thus its interpretation as "Alabaster" is provisional (Davletshin 2021). The sign "Pot" is the syllable **ko**. The last syllable is underspelled, possibly, in order to avoid the repetition of the sign: "Alabaster Mountain"-"Pot", **TETZ-ko**, *tĕtzkŏhkŏ,* 'Texcoco'. Above Texcoco is a "cradle" with a baby lying in it, an indication of the birth of a child. A "Coyote Head" with a "Penance Collar" is joined by a black line, resulting in the name of the famous ruler: **NESAWAL-KOYO**, *nĕsāwălkŏyōtl*, 'Fasting Coyote'. Above the personal name is a "Rectangular with Hooked Lines" at a diagonal, this is a sign for **TONAL**, *tōnăllĭ*, 'day' (see also Helmke and Nielsen, this volume; Díaz, this volume).[14] Joined by a "black line" are a "Circle" and a "Deer Head", indicating the day when the event took place: **TONAL = SE MASA**, *tōnăllĭ sĕmmăsātl*, '[on] the day 1 Deer'. The resulting meaning of the record is 'in the year 1 Rabbit, Nesawalkoyotl was born in Texcoco on the day 1 Deer'.

The following year (1403) is written as **OME AKA**, *ōmĕ ākătl*, '(the year of the day named) 2 (and) Reed'. At the base of the column is the standard spelling of the Mexica capital: "Stone"-"Cactus", **te-NOCH**, *tĕnŏchtĭtlăn*. Above Tenochtitlan is the image of a "throne with backrest", with a "corpse" placed on the throne, wrapped in cloth and bound with rope. Joined to the throne are several

pu^{o}> and **CHOLO** <cholulteca> in the *Codex Mendoza*, folios 23r and 42r.

[12] This interpretation was originally proposed in my talk at the 2009 Mesoamerica conference (in Bonn). At the time, I did not have the book by Charles Dibble at my disposal and only a few parts of the codex were available to me.

[13] This pattern is consistent and presented elsewhere (Davletshin 2021).

[14] The sign possesses two reading values **TONAL** and **ILWI** (*e.g.* the *Codex Mendoza*, folio 19r). The words *tōnăl-lĭ* and *ĭlwĭ-tl* both can be translated as 'day' into English but have slightly different meanings – 'a name day, the day of birth according to this day, a symbol of fate' and 'day as a period of time, feast day'. In the context under discussion, the reading value **ILWI** is excluded.

Figure 4.5: Syntax in the annual records of the *Códice en Cruz* which follows the general pattern "(year of the event) – (place name where the event happened) – event – name of the person who participated – (day on which the event happened)". The parentheses show those constituents that are not obligatory and can be omitted (*Códice en Cruz* © Bibliothèque Nationale de France).

"Arrows in a Hand", which give us the spelling of the name: **AKAMAPICH**, *ākămāpīchtlĭ*, the personal name, literally, 'Handful of Arrows'. This is the year when Akamapichtli, the king of Tenochtitlan, died.

The year "3 Circles"-"Spear Point" follows: **EYI TEKPA**, *ēyĭ tĕkpătl*, '(the year of the day named) 3 (and) Flint' (1404). Above the spelling of Tenochtitlan ("Stone"-"Cactus", **te-NOCH**) we can see a man who is sitting on a "throne with backrest". Joined to the throne is a "Hummingbird" surmounted by a "Feather", two signs spell the name of the second *tlăhtŏānĭ* of Tenochtitlan: **WITZIL-IWI**, *wītzĭlĭhwĭtl*, providing the personal name, literally, 'Hummingbird Feather'. This is the year when Witzilihwitl acceded to the throne in Tenochtitlan.

The year 1405 '4 House' is written as "4 Circles"-"House", **NAWI KAL**, *nāwĭ kăllĭ*. The place name is missing. A personal name is joined to a "cradle": "Skull"-"Water", **TZONTEKOM-a**, *tzontekonchatl*. The meaning of this personal name is unclear but it is likely to be related to the word *tzŏntĕkōmătl,* 'skull'. Above a "Rectangular with Hooked Lines" hover a "Water Circle" and a "Stroke": **TONAL = SE KIYAW**, *tōnăllĭ sĕnkĭyăwĭtl*, '[on] the day 1 Rain'.[15] These glyphs record the birth of Nesawalkoyotl's brother Tzontekonchatl. Nothing noteworthy happened in the next year 1406, '5 Rabbit'.

These records of the first five years allow us to see a consistent syntactic pattern: 1) the year when the event took place, 2) the place where it happened, 3) the event itself, 4) the name of the person who participated in the event, and 5) the day on which the event took place. This consistency is surprising, in particular, given that the basic word order of Classical Nahuatl is predominantly verb-initial, wherein verbs tend to precede subjects and objects (Steele 1976). In all likelihood, this consistency reflects the underlying linguistic patterns, in other words, sentences in Nahuatl; naturally, adverbial phrases of place and time are not always present in either speech or writing. This syntactic pattern is even more evident when two or three events are given together in the record of a single year. In order to compare the syntactic patterns of Classical Nahuatl and glyphic phrases in the *Códice en Cruz* we need to assume that the reading order is from the bottom of the column upwards. This reading order is not exclusive, although predominant in the Nahuatl script. Moreover, the records in the *Códice en Cruz* are situated at the very bottom and unfilled space, if any, is found in the upper part of the column, which confirms the identified reading order.

The record for the year 1414, '13 Rabbit', clearly shows that the sequence is intended to be read from bottom up, because the death of the second *tlăhtŏānĭ* of Tenochtitlan, Witzilihwitl, is followed by the accession of the third one, Chimalpopoka (Figure 4.5). His name, 'The Shield Smokes', is spelled as "Shield-Smoke", **CHIMAL-po/POPOKA**, *chīmălpŏpōkă*. In Nahuatl writing, a sign can have more than one value, affecting the resulting reading. Such alternate readings can be related to each other, as in this particular context. In such cases it can be difficult to ascertain the intended reading: **po** is acrophonically derived from the noun *pōktlĭ* 'smoke' and **POPOKA** is a logographic reading based on the intransitive verb *pŏpōkă* 'to smoke'. Both reading values make sense in the spelling of *chīmălpŏpōkă*, although the last one assumes less abbreviation and may thereby be preferable. I use slashes "/" to indicate this sort of ambiguity in the interpretation of polyvalent signs.

We can confirm that the phrases 'on such-and-such day' do not refer to people's calendrical names, which were common in Central Mexico. These are dates because similar phrases appear in different types of events. In the year 1515, '10 Reed', the king of *Chĭyāwtlān* 'Place of Many Swamps', which is known by the name *K*^{w}*āwtlătzăk*^{w}*īlōtl*, "Eagle Door', died on the day '4 Flower'. This event was followed by the death of the king *Nĕsāwălpĭllĭ* 'Fasting Child' in Texcoco (Figure 4.5).

In a few examples, the spelling of place names appears not at the beginning but at the end of the record. In the column above the year 1431, '4 Reed', is a ruler seated on a throne with backrest and a black line indicates that his hieroglyphic name as **NESAWAL-KOYO** (Figure 4.6). Above him is a male sitting on the ground with his name written syllabically as Kokopin – "Pot"-"(Broken) Arrow", **ko-pi**.[16] Above him hovers a place name "Mat"-"Cave", **te?-pe/PETLA-OSTO**, *Tĕpĕtlăōstōk*, "At the Bedrock Cave". The syllable **te** might be either inscribed in the sign **OSTO** CAVE or underspelled. In this year, Nesawalkoyotl acceded to the throne at Tenochtitlan, then returned to Texcoco and named Kokopin as ruler of Tepetlaostok. Some details of this glyphic passage are unclear, as for example, the sitting on the ground "Man" can stand for 'his man' or more narrowly as 'his vassal'. The place name at the end of the sequence seems to contradict the general syntactic pattern. However, the word order in Nahuatl is relatively flexible, so the intended reading here might differ and be understood as: 'Kokopin of Tepetlaostok was/became his vassal'.

A few death events are represented by a corpse, which is wrapped and bound with rope. This means

[15] The number of "strokes" from 1 to 13 indicates numerals in some specific contexts in the documents of the Texcoco school (Davletshin & Lacadena 2019: 309).

[16] In the *Códice en Cruz*, the sign "Broken Arrow" **pi** is written in ligature with the sign "Pot" **ko**, so we cannot see that the arrow is "broken" and graphically different from the sign "Arrow" **mi** (cf. *Memorial de los Indios de Tepetlaoztoc*, folios 2v and 4r).
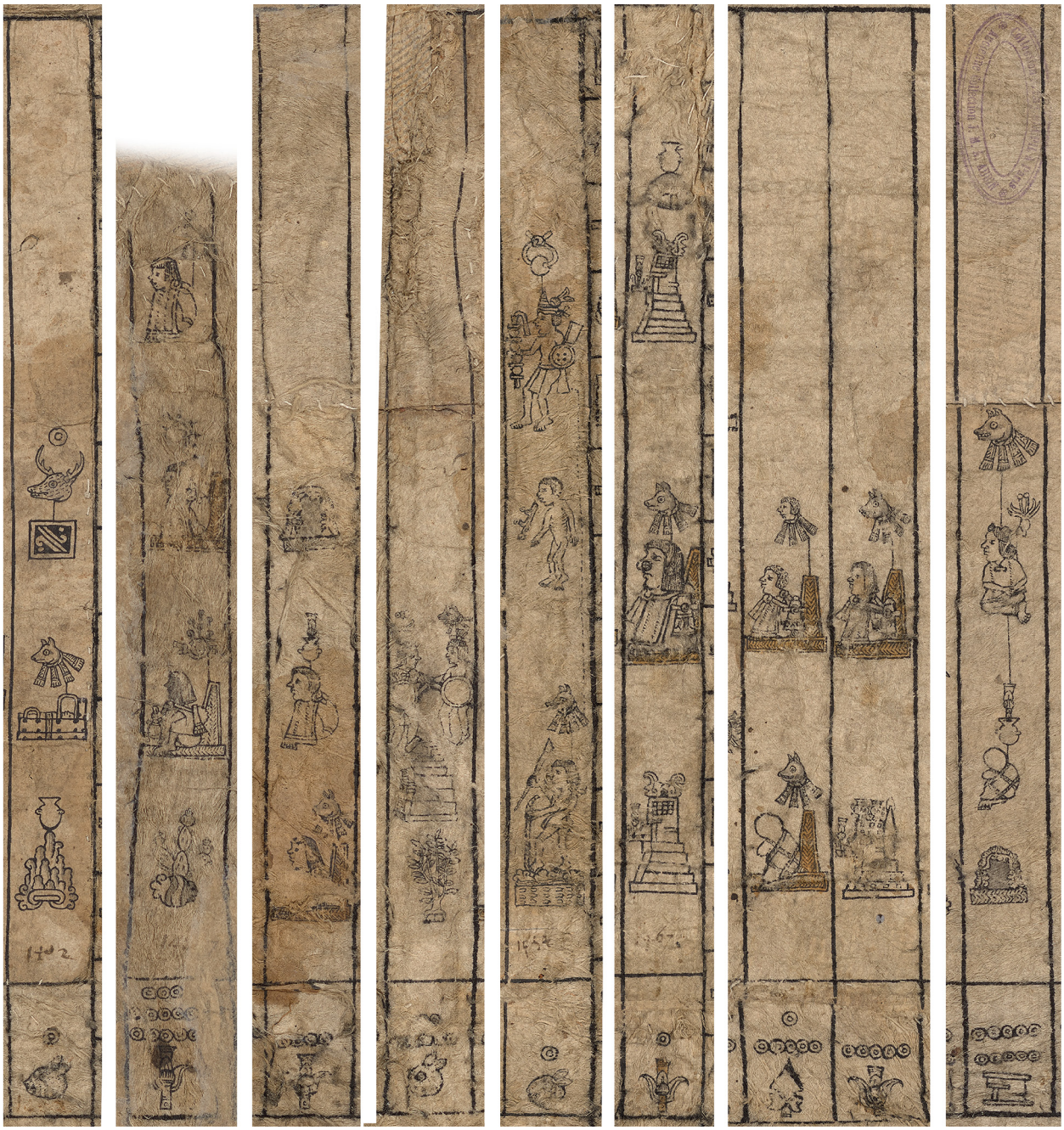
Figure 4.6: The biography of Nesawalkoyotl according to the annual records in the Códice *en Cruz* (*Códice en Cruz* © Bibliothèque Nationale de France).

that the corpse seated on a throne is a combination of two independent signs "Corpse" and "Throne with Backrest". One such record is attested in the year '10 House', 1489 (Figure 4.6). Above the place name Tepetlaostok is a "Corpse" joined to the name Kokopin. This name is connected with an image of a "Woman", two black lines go upwards: one to the sign "(a type of) Flower" and the other to the name Nesawalkoyotl. In 1489, Kokopin died in Tepetlaostok; his wife was Nesawalkoyotl's daughter Askaxochitl, whose name refers to a plant with bright red flowers (*āskaxōchitl*, literally, 'ant-flower').

Two death events related to women are attested in the codex (1489, '10 House', and 1506, '1 Rabbit') and two other are related to unidentified men, who did not enjoy the title of a king (1498, '6 Rabbit', and 1514, '9 House'). All four are represented by corpses without thrones with backrest. A logical corollary of this is that the sign "Throne with Backrest" is used to write the title 'king,

ruler'. This conclusion is supported by the observations that the sign "Throne" is attested in the records of accessions, deaths and all of the events commissioned or supervised by kings during their reigns, whereas these personages lack the "Throne" sign before their enthronement. The events that mention Nesawalkoyotl are indicative in this respect (Figure 4.6): he was born (1 Rabbit, 1402), went to visit Tenochtitlan kings (13 Reed, 1417), acceded to the throne and named Kokopin as ruler of Tepetlaostok (4 Reed, 1431), participated in the conquest of K^{w}awtitlan (7 Rabbit, 1434), broke ground for the construction of a temple in the aqueduct in Chapoltepek (1 Rabbit, 1454), assisted the drilling of the first fire in a new temple for Witzilopochtli (1 Reed, 1467), assisted the drilling of the first fire in another new temple (5 Reed, 1471), died (6 Flint, 1472) and was the father of his vassal's wife (10 House, 1489).[17]

The conclusion that the sign "Throne" denotes the title 'king' assumes that some event verbs, including accessions to the power, are underrepresented in the codex. This observation comes as a surprise but it should be mentioned that non-verbal predicates abound in Classical Nahuatl. Thus, the phrase 'king Chimalpopoka in Tenochtitlan' can be understood in Nahuatl as 'the king Chimalpopoka was in Tenochtitlan' or even 'Chimalpopoka was/became the king in Tenochtitlan'. From this, it also follows that the reader was supplying the missing information about the recorded events from the general context.

It is remarkable that the glyphs for events and dates never appear complemented phonetically or written by syllabic signs in the *Códice en Cruz*. Nevertheless, syllabic signs abound in the spelling of personal names and place names as we can see from the many examples above.

The TLATOANI Sign in Nahuatl Hieroglyphic Writing

It is tempting to interpret the sign "Woven throne with backrest" in the *Códice en Cruz* as a sign for **TLATOANI** because it is always associated with the characters known to have been *tlăhtŏhkĕh*. In fact, the image of the woven throne with backrest was interpreted as an iconographic motif associated with Aztec kings long ago. The question is how we can prove that the design "Throne with Backrest" possesses the reading value **TLATOANI** or, in other words, that this does not belong to iconography but to writing.

One kind of evidence can be seen in the historical documents of the so-called "Crónica X" (Barlow 1945). The *Tlotzin Map* (Mohar Betancourt 2009) includes a king list of the Texcoco lineage where Nesawalkoyotl and his successors sit on thrones with backrests, meanwhile his predecessors do not feature the sign. This correlates with the fact that Nesawalkoyotl was the first Texcoco ruler to enjoy the title *tlăhtŏānĭ*. The same pattern is observed in the *Tira de Tepechpan*, the *Codex Telleriano-Remensis*, the *Primeros Memoriales* and the *Memorial de los Indios de Tepetlaoztoc* (Sahagún 1997; Noguez Ramírez 1996; Quiñones Keber 1995; Valle 1994a). In the last document, Kokopin and his successors are depicted on thrones with backrests as *tlăhtŏhkĕh* 'kings' but their ancestors bear bows and arrows as *chīchīmēkătēk^{w}tĭn* 'lords of barbarians' (from folio 2v to 4r). The *Codex Aubin* is also illustrative in this respect (Lehmann *et al.* 1981). The kings are depicted sitting on thrones during their accessions (where we can see the throne) but not in the case of their death (where we do not see it). Significantly, the accompanying Nahuatl texts with Latin characters mention the title in the accession events and omit it when the death of the kings is described. Nonetheless, the alphabetic text in this document is significantly more extensive than the corresponding hieroglyphs and this prevents us from establishing exact equivalents for hieroglyphic signs. It should be stressed that only glosses in Latin writing, phonetic complements and substitutions can be considered as solid evidence of proposed reading values. These are missing in the above-mentioned documents.

There are three personal names in the *Codex Xolotl*, which include the sign "Throne with Backrest" as part of their spellings (Figure 4.7). In the *Codex Xolotl*, glosses are nearly always absent, but the identities of the personages depicted were established by Dibble (1980; see also McGowan and Van Nice 1979; Thouvenot 1987). One of them is the son of Tesosomok, Tlatokaikpaltzin, whose name is written twice by means of the signs "Throne with Backrest" and "Lower Body" **TZIN** (Map 8, B2 & C2) (Figure 4.7a-b). The name *Tlăhtŏhkăĭkpăltzĭn* literally means '(Esteemed) Royal Throne'. The sign "Throne with Backrest" stands for *tlăhtŏhkăĭkpăl-* "royal seat" here; it also depicts such a seat. Thus, the logographic reading of the sign is either **TLATOKAIKPAL** or **TLATOKA**, if we assume that the second part of the name is underspelled. The name of the Acolman lord *Tlăhtŏhkătlătzăk^{w}īllōtzĭn* '(Esteemed) Royal Door' appears twice. It is written by means of the signs "Throne with Backrest", "Head with a Speech Scroll" and "Door?" on Map 5 (C1) and "Throne with Backrest" plus "Head with a Speech Scroll" on Map 6 (C1). The last spelling is likely to be abbreviated. The tiny image of the "door" is only tentatively identified. The function of the sign "Head with a Speech Scroll" is unclear but it may stand for **TLATO** 'to speak/say things' in this context, functioning as a lexical complement: **(TLATO)-**

[17] Dibble (1981: 17) suggests that the event of 1454 took place in Texcotzinco. However, Teresa Rojas Rabiela (pers. comm. 2020) relates it to the construction of the aqueduct in Chapultepec (see the *Codex Mexicanus*, 23-24 and Rojas Rabiela 2019: 21).

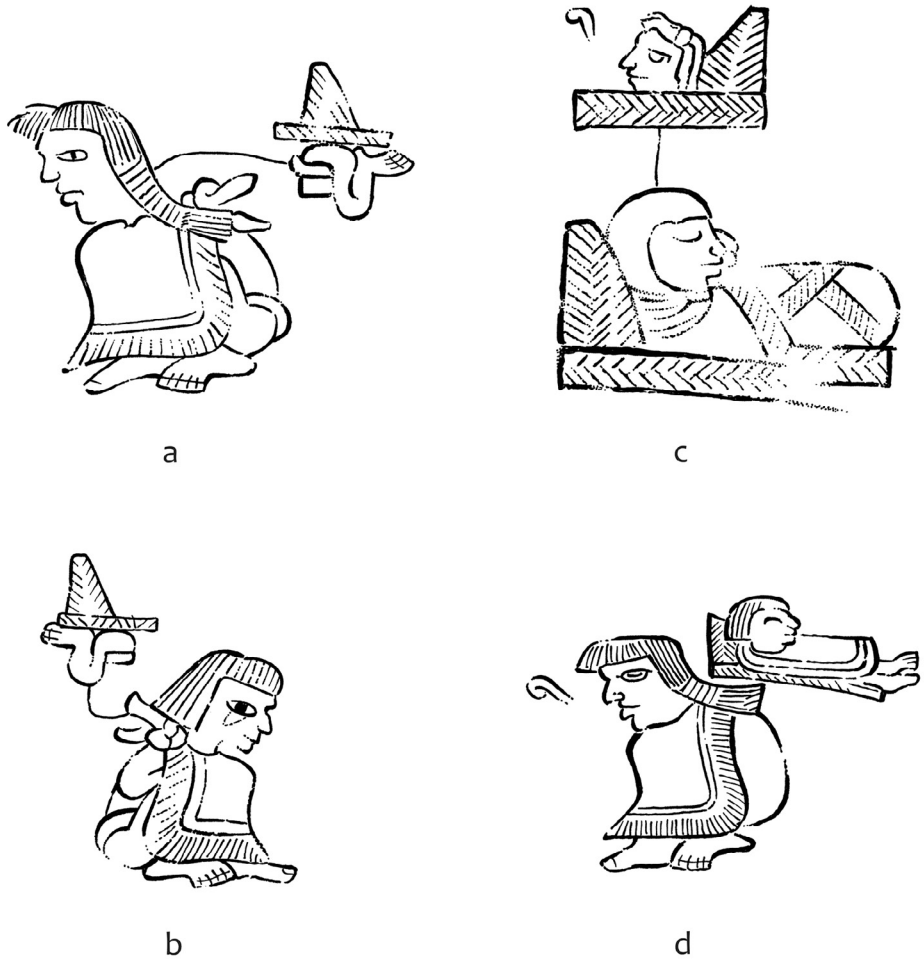

Figure 4.7: Hieroglyphic names with the sign "Woven Throne with Backrest" (transliterated as X). **a)** "Throne with Backrest"-"Lower Body", **X-TZIN**, for Tlahtohkaikpaltzin (*Codex Xolotl*, Map 8, B2). **b)** "Throne with Backrest"-"Lower Body", **X-TZIN** for Tlahtohkaikpaltzin (*Codex Xolotl*, Map 8, C2). **c)** "Throne with Backrest"-"Head with a Speech Volute", **TLATO?-X** for Tlahtohkatlatzak^{w}illotzin (*Codex Xolotl*, Map 5, C1). **d)** "Recumbent Man"+"Throne with Backrest", **X-KOCHI**, for Tlahtohkakohchitzin (*Codex Xolotl*, Map 8, D2) (drawings by Christophe Helmke).

TLATOKA-TLATZAK^{W}ILLO, *Tlăhtŏhkătlătzăk^{w}īllō*[*tzĭn*], 'personal name, literally, Royal Door' (Figure 4.7c).[18] It is important to add here that the honorific suffix *-tzĭn* 'little one, esteemed' is facultative in both speech and writing. In contrast with these two somewhat difficult spellings, the epigraphic analysis of the following name is straightforward (Map 8, D2). Chimalpopoca's vassal *Tlăhtŏhkăkŏchĭh*[*tzĭn*] '(Esteemed) One Who Sleeps as a King' is written as a "Recumbent Man" on a "Throne with Backrest": **TLATOKA+KOCHI** (Figure 4.7d). These three names allow us to demonstrate the logographic reading of the sign under discussion as **TLATOKA**, which corresponds to the bound form of the word *tlăhtŏānĭ*. It has been already mentioned that the same logogram in the Nahuatl script can be used to spell both bound and free forms. Thus, the reading of the sign can be considered securely established as **TLATOANI/TLATOKA**.

Another glyphic context in the *Codex Xolotl* (Map 7, B4-C4) also suggests that the reading of the sign "Throne" has to do with the word *tlăhtŏānĭ* and can also spell a verb (Figure 4.8). Above the sequence "12 Strokes"-"Rabbit"-"Turquoise" **MATLAKTLIOMOME TOCH XIW**, '(in) the year 12 Rabbit', six persons are depicted on thrones with their hieroglyphic names linked to their heads. Two place names *Wĕxōtlān* and *Kōātlīnchān* are connected by lines to the heads of two figures; a dotted

[18] The writing principle "double complementation of homophonic logograms" was first defined and described by Alfonso Lacadena (2018). I prefer to analyse it as lexical complementation (Davletshin 2021).

Figure 4.8: The sign "Woven Throne with Backrest" as a verb (transliterated as X).
"Man Sitting on a Throne" = "Coyote Head"-"Penance Collar" = "Circular Fan Ornament", **NESAWAL-KOYO = CHICHIMEKATEK^{W}**, *nĕsāwălkŏyōtl* [ō]*chīchīmēkătēk^{w}tĭ*, 'Nesawalkoyotl became a lord of barbarians'. "Man Sitting on a Throne" = "Eye"-"Vanilla Flower" = "Throne with Backrest", **(IX)-IXTLILXOCHITL = X**, *īxtlĭlxōchĭtl* [ō]*tlăhtŏkāt*, 'Ixtlilxochitl became a king' (*Codex Xolotl*, Map 7, B4-C4 © Bibliothèque Nationale de France).

line seems to indicate that the event took place in Wexotlan. The two individuals at the middle of the scene are Nesawalkoyotl and his father Ixtlilxochitl – "Eye"-"Vanilla Flower", **(IX)-IXTLILXOCHITL**, *īxtĭlxōchĭtl*, personal name, literally, 'Eye Vanilla' (a kind of vine used to treat diseases of the eye). The persons above them are **TLAKO**, *Tlākŏhtzĭn*, a personal name, literally, 'Slave', the king of Wexotlan, and **o-pa**, *Ŏhpăntēk^{w}tlĭ*, another personal name, literally, 'Lord on the Road', the king of Koatlinchan, who discuss a demand that Tesosomok, ruler of Askapotzalko, had placed on them, requiring the weaving of cotton into *mantas* (Offner 2010: 261). Indeed, the signs of two square and ornamented pieces of cloth *mantas,* and two bundles with cotton flowers are found between them.[19] **TOSAN**, *Tŏsăntzĭn*, 'personal name, literally, Gopher' (from Huexotla) is depicted on the left of Nesawalkoyotl; and **TLAL-NAWA**, *Tlālnāwăkătzĭn* (from Koatlichan) on the right of Ixtlilxochitl. The four personages sit on thrones and speak. A sign "Throne with Backrest" is connected by a black line to the hieroglyphic name of Ixtilxochitl, and a sign depicting a "Circular Fan Ornament with Feathers" – to the name of Nesawalkoyotl. Such circular ornaments with yellow parrot feathers, *kosoyawalōllĭ*, were worn on the back of the head as insignia of

[19] An alternative, but yet unattested in the alphabetic sources interpretation is that the mantas, bundles and flowers were given as tribute to Ixtlilxochitl at his accession to the throne.

chīchīmēkătēk^{w}tlĭ 'lord of barbarians' (*Primeros Memoriales* folios 51r-53v, cf. Offner 2010 and Olko 2014: 226). In the year '12 Rabbit' Ixtilxochitl was proclaimed as 'the lord and monarch of all the earth' (Dibble 1980: 92; Offner 2010: 262). We can also deduce that in this event his son Nesawalkoyotl received the title *chīchīmēkătēk^{w}tlĭ* and was formally appointed as his successor. Indeed, several members of the Texcoco dynasty are known to have been referred by this title. This analysis allows us to tentatively determine the reading values for "Circular Fan Ornament" as **CHICHIMEKATEK^{W}** and "Throne with Backrest" as **TLATOKA**, and to read these signs in this context as *chīchīmēkătēk^{w}tĭ* 'he became *chīchīmēkătēk^{w}tlĭ*' and *tlăhtŏhkāt* 'he became *tlăhtŏānĭ*'.

The following observations allow us to assert that the signs under discussion also convey verbs. First, the sign "Throne" stands for titles in many other cases where kings sit on "thrones" but in this particular case, it appears connected by a black line to the hieroglyphic name. In other words, the sign "Throne" appears twice and once it is intentionally written in an uncommon way. Second, we know from other sources that the event was about the receipt of the title, that is to say, it is not about being a king but about becoming one. Third, as far as we can understand Nahuatl writing, the verb *tlăhtŏkātĭ* and the noun *tlăhtŏānĭ* should be written with the same logogram, as the corresponding suffixes are almost never spelled out. The same holds true for *chīchīmēkătēk^{w}tĭ* and *chīchīmēkătēk^{w}tlĭ*. I believe that this is one of a few examples where event words are explicitly written with logograms in Nahuatl hieroglyphic writing. At present, I cannot explain why Tosantzin, Tlalnawakatzin and Nesawalkoyotl are depicted sitting on thrones.

The irrefutable proof for the reading of the sign under discussion in other contexts comes from the short glosses in Latin writing, which exclude other interpretations such as 'lord', 'to sit down on the throne', 'to ascend the throne' and 'throne'. These can be seen in two genealogical documents and a king list (Figure 4.9). One of them is the so-called Circular Genealogy of Nezahualcoyotl housed at Nettie Lee Benson Latin American Collection in the University of Library, Austin, Texas. In that document, two personages are depicted on the woven thrones with backrests accompanied by glosses <tlixtecatʒi.> and <tepiçiatʒin>. In four cases, the signs "Woven Throne" feature hieroglyphic names above them and are identified by glosses as <(lost)ani tenochtitlan /(lost)coatʒin>, <tlatoani neçahualcoyotʒin.>, <tlatoani neçahualpitʒintlj.> and once again <tlatoani neçahualcoyotʒin> (Figure 4.9a-b). The persons sitting on the thrones are absent and the glosses allow us to identify the reading of the sign unambiguously as **TLATOANI**. The graphic element "throne" in this document is elaborate, showing three different parts of the throne – the backrest, the base and the mat upon which the ruler is supposed to be sitting.

The so-called "Genealogy of the Mexican Princes" (*Genealogía de los príncipes mexicanos*) presents thirteen personages whose genealogical connections are indicated by red lines. Ten of them are males, three are females; eight males are sitting on thrones with backrests and two on reed mats; five of the eight males sitting on the thrones are accompanied by the glosses which start with the word <Tlatohuani> (Figure 4.9c). The females are not rulers, nor are they depicted sitting on thrones with backrests (Figure 4.9d). Here, once more, the glosses and the context strongly suggest the reading **TLATOANI** as well.

The king list of Tenochtitlan at the end of the *Codex Aubin* was originally an independent document (Lehmann *et al.* 1981). In this, each king is supplied with the exact number of years or days of his reign. The opening page includes the image of a king sitting on a throne with backrest, with a speech volute and the signs **te-NOCH** (Figure 4.9e). These signs are connected with a solid black line to the king. The number of the years is indicated as 52. The gloss <tenochtʒintlatoani.> leaves no room for doubt that the image of the "king sitting on a throne" is intended to be read *tlăhtŏānĭ*.

The three documents where the sign is accompanied with glosses allow us to make some palaeographic observations. Three graphic designs "Woven Throne with Backrest", "Person Sitting on a Throne with Backrest" and "Speaking Person Sitting on a Throne with Backrest" all substitute for each other and convey the same reading value **TLATOANI**. At the same time, the Genealogy of the Mexican Princes seems to contrast "Person Sitting a Throne" with "Person Sitting on a Mat" which is likely to refer to a lower political rank. It is remarkable in this respect that in the *Codex Mendoza* (folio 68r) the king of Mexico <señor di mex^{co}> is depicted on a throne with a backrest whereas 'lords' <tectli.> and 'young men' <telpuchtli.> are shown seated on mats. The king of Mexico and lords are depicted wearing royal diadems and young men are bareheaded. Nevertheless, on the other pages, kings are seated on rectangular mats and, significantly, on the page dedicated to the foundation of Tenochtitlan (folio 2r) Tenoch sits on a rectangular mat while the nine leaders around him sit on reed bundles. The images of the *tlăhtŏhkĕh* in the *Codex Mendoza* are also supplied by speech volutes, cf. *tlăhtōă* 'to speak'. Three alternative explanations can be proposed for the observed patterns. First, the scribe(s) of the *Codex Mendoza* decided to disguise the greatness of the Aztec kings in the face of the Spanish monarch and omitted the title. Second, the scribe of the Genealogy used a simplified version of the sign in order

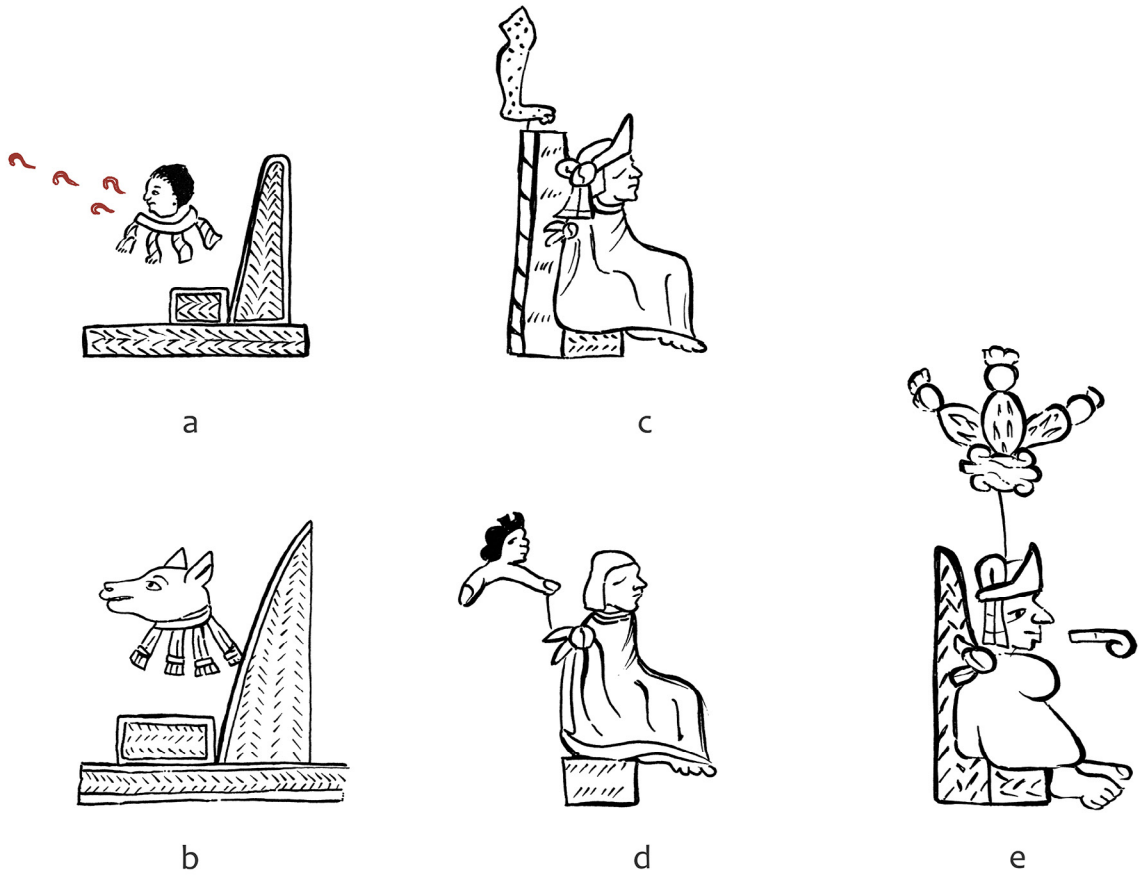

Figure 4.9: The sign "Woven Throne with Backrest" accompanied by glosses in Latin characters (transliterated as X). **a)** "Red Volutes of Speech"-"Throne with Backrest"-"Penance Collar"-"Head of Child", **? X NESAWAL-PIL**, <Tlatoani Neçaualpiltʒintli.>, *? tlăhtŏānĭ nĕsāwălpĭltzĭntlĭ*, '(Esteemed) king Nesawalpilli ordered/said this'. **b)** "Throne with Backrest"-"Penance Collar"-"Head of Coyote", **X NESAWAL-KOYO**, <Tlatoani neçaualcoyotʒin[lost]>, *tlăhtŏānĭ nĕsāwălkŏyōtzĭntlĭ*, '(Esteemed) king Nesawalkoyotl' (Circular Genealogy). **c)** "Man Sitting on a Throne with Backrest" = "Leg"+"Dust", **X TIS{A}-so**, <Tlatohuani Tiçocicatʒin Septimo Rey>, *tlăhtŏānĭ tisokă*[*tzĭn*], '(Esteemed) king Tisok'. **d)** "Man Sitting on a Mat" = "Two Fingers with Nails"+"Head of Woman", **SIWA-ISTI**, <çihuayʒtitʒin.>, *sīwăĭstĭ*[*tzĭn*], '(Esteemed) Siwaisti' (personal name, literally, 'Female Fingernails') (Genealogy of the Mexican Princes). **e)** "Man Sitting on a Throne with Backrest and Speaking" = "Stone"-"Cactus", **X = te-NOCH**, <tenochtʒintlatoani.>, *tĕnŏchtzĭn tlăhtŏānĭ*, 'ruler Tenoch' (*Codex Aubin*, folio 70r) (drawings by Christophe Helmke; glosses in Latin lettering are omitted from the examples above).

to show relative insignificance of the rulers in Colonial times. Third, the sign "Person Sitting on a Mat" is a graphic variant of the common sign "Person Sitting on a Throne" **TLATOANI** restricted to the documents of the Tenochtitlan school and unattested in Texcoco and Tepetlaoztoc. If the last suggestion is correct, the scribes of Tenochtitlan might have deliberately chosen the variant "Person Sitting on a Mat" in order to downplay the status of Prehispanic monarchs. I admit that I cannot explain why four so-called judges are depicted sitting on thrones with backrests in the *Codex Mendoza*, on folio 68r.

Implications of the Finding

The aforementioned arguments show that the sign "Woven Throne with Backrest" is intended to be read *tlăhtŏānĭ* 'king, ruler (free form, singular)' and *tlăhtŏhkă-* 'king , ruler (compound form)' in Nahuatl codices. An intriguing question is why this very frequent sign never appears complemented phonetically or is substituted by syllabic signs in the available text corpus. In fact, the same observation holds true for other signs, denoting pre-contact political and professional titles, where the reading values are established thanks to the glosses written in Latin characters: **IKNOSIWA** 'widow', **IXPOPOYO** 'blind person', **KAKSOK** 'cobbler', **SOKICHIWKI** 'potter', **TEK^{W}** 'lord', **TENEXTLATI** 'limestone burner', **TLAKO** 'slave', **TLAK^{W}ILO** 'scribe', **TLAMATKI** 'herbalist, witch doctor', **TLAXINKI** 'carpenter' and many others (see the *Matrícula de Huexotzinco*, *Codex Vergara*, etc.). The fact that Nahuatl notational signs show very few phonetic complements or substitutions is of no surprise because it is also true

of the notational signs in other logosyllabic writing systems and alphabetical European scripts (as the reader knows from their own experience). In Maya writing, numerical and calendrical signs show complements and substitutions for syllabic spellings in exceptional cases, mostly outside of calendrical contexts. Strange as it may seem, more than a half of the Mayan signs for Tzolk'in day names remain phonetically undeciphered even though they appear in almost every hieroglyphic text, often in many examples. Some of these signs possess two different reading values, one is used in calendrical passages and the other, elsewhere. For example, the sign for the first day of Tzolk'in **'IMUX** is read as **HA'** 'water' in non-calendrical contexts, one for the second day **'AK'B'AL** as **'AK'AB'** 'darkness', one for the eighth day **LAMB'AT** as **'EK'** 'star', etc. Special reading values of the Tzolk'in signs in calendrical passages can be seen when the day names in Mayan languages are taken in consideration (for compared lists of the Tzolk'in day names see Campbell 1988: 382-384; Kaufman 2017: 102-104; Thompson 1950: 67-68). In Nahuatl writing, numerical and calendrical signs show complements and substitutions when these are used for spelling personal names but are extremely rare in other contexts (Davletshin and Lacadena 2019: 320). Likewise, in the English tradition, **1** can be read only as *wʌn* in mathematical notations but as both *wʌn* and *fɜ:st* in other contexts; **I** is read as *wʌn* in Roman numerals and as both *aɪ* and ɪ in non-notational texts. In other words, notational signs tend to be incorporated into phonetic spellings. In these cases, the signs behave as polyvalent logograms and optionally acquire phonetic complements to cue particular readings. The fact that pre-contact titles mostly fall in the class of notational signs supports the proposed interpretation because notational signs form a system of related signs, restricted to a certain domain of knowledge. We can speculate that Nahua scribes wrote rare native and late Spanish titles by means of logograms and phonetic signs because notational signs for these were unavailable. As a result, the scribes were forced to resort to phonetic and logographic signs. The fact that Nahuatl notational signs are pictorial comes as no surprise either, because 1) all Nahuatl signs are highly pictorial and, 2) because notational signs tend to be pictorial even in linear scripts as we can see in the case of Roman and Chinese numerals (see many examples of this type in Chrisomalis 2010).

It is possible to offer the following generalization. There are two classes of spellings in the Nahuatl script: 1) personal and place names, and 2) verbs, titles, dates and quantities. Syllabic and phonetic signs are restricted to the former class, whereas notational signs are principally used for the latter. At this juncture we should consider the appropriateness of distinguishing notational signs from logograms and syllables in transliteration. I believe it is important because three types of signs possess different combinatorial properties. Notational signs are sometimes considered as a subclass of logographic signs but the considerations presented above show that logograms and notational signs behave in quite different ways. I suggest using underlining to indicate that the sign is not logographic but notational. The above-mentioned passage from the list of Tenochtitlan kings can thereby be analysed as follows: **te-NOCH** = **TLATOANI** <tenochʇintlatoani.>, *tĕnŏchtzĭn tlăhtŏānĭ* '(esteemed) king Tenoch'. Likewise, the above-mentioned passage from the *Códice en Cruz* can be analysed as **TETZ-ko TLAKAT? = NESAWAL-KOYO TONAL? = SE MASA**, *tĕtzkŏhkŏ* [*ō*] *tlākăt nĕsāwălkŏyōtl* [*īpăn*] *tōnăllĭ sĕmmăsātl* 'In Texcoco, Nesawalkoyotl was born on the day 1 Deer'. The square brackets are intended here to indicate additional information, which is not given in the transliteration and is supplied by the reader from the context (in a way similar to which we read receipts and prescriptions). The article ĭn is evidently underrepresented in the examples under discussion, which is also true of other contexts in the Nahuatl script; I make no attempt to reconstruct missing articles here.

The decipherment of notational signs and logographic signs differ; the last one depends on phonetic complements, substitutions and glosses in Latin writing while the former one depends on glosses and general context, primarily, the ability of several signs to form a system of interrelated reading values. The above-mentioned examples indicate the importance of distinguishing between notational signs and logograms. Two different signs related to the same verbal root *mĭk-* 'to die' are attested in Nahuatl hieroglyphic writing. The signs "Skull" and "Corpse" are both frequently used but follow different patterns of distribution in the texts. The sign "Skull" is used as the notational sign for the day name 'Death', *mĭkĭstlĭ*, **MIKIS**, and as the logogram **MIK** in the spellings of personal names and place names, also in the records of direct speech in the *Codex Xolotl*. The sign "Corpse, Wrapped in Cloth and Bound with Rope" is used as the notational sign **MIK** in annals and historical maps where it indicates that a person 'died', *(ō)mĭk,* and rarely as the logogram **MIK** in some documents (e.g. *Codex Mendoza*). In other words, the established reading values of Nahuatl logograms should be confirmed when they are used as notational signs and depending on the particular notational system where these are used.

Recognition of the productive use of pictorial notational signs in Nahuatl writing allows us to reconsider the hotly debated question whether and which images in Nahuatl documents are intended to be read (e.g. Thouvenot 1997: 79-81, 2002: 184). It also has implications for the theory of writing and its origin. Lack of phonetic complements

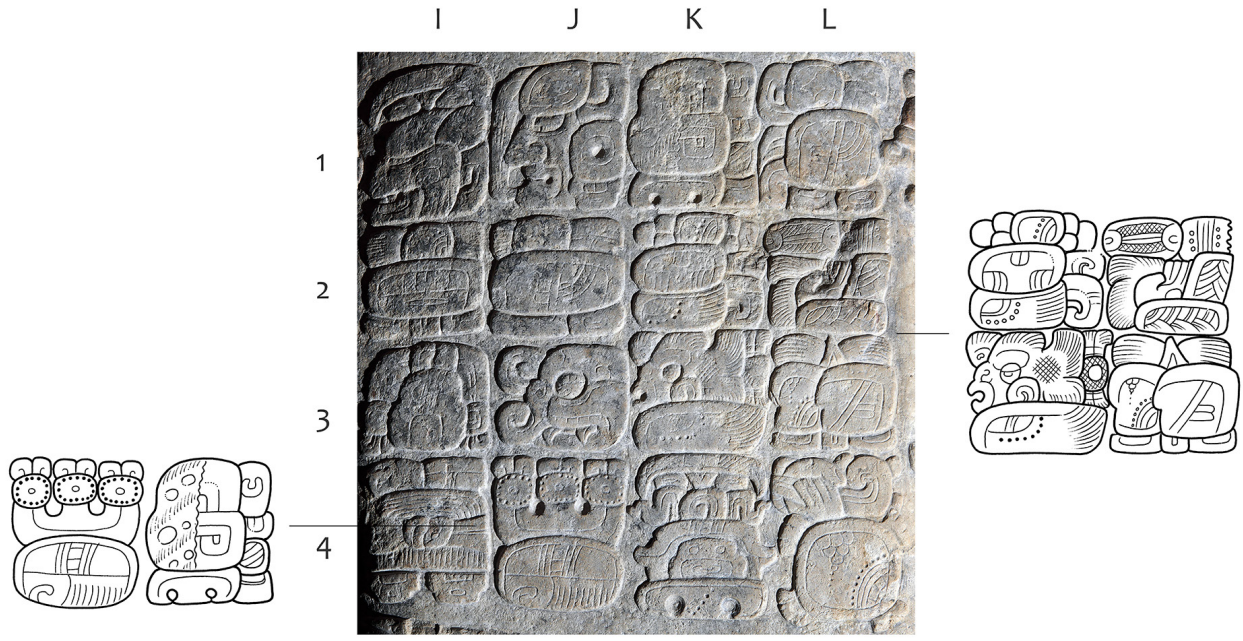

Figure 4.10: The sign "Woven Throne with Backrest" on Tikal Stela 31 (transliterated as X).
The name of the warrior depicted appears at the left: **ch'a-ta WAY-na-'a** (J4-K1). Teotihuacano glosses are marked at the right: **t'o?-cha?-wa-k'i ko-sa-ka**-"Lifted Hand"-**X ka-che?-k'i** (K2-L3) (photograph courtesy of the "Atlas Epigráfico de Petén" Project, CEMYK, courtesy of Dirección de Patrimonio Cultural y Natural de Ministerio de Cultura y Deportes de Guatemala; drawings of the glyphs by Christophe Helmke).

and productive underspelling of grammatical markers are characteristic of the oldest texts in Mesopotamia and Egypt (see e.g. Morenz 2007). The Nahuatl script provides evidence of other traits that are typical for early scripts: high pictoriality, iconic transparency of signs (both phonetic and logographic), loose reading order, abundant abbreviations and alternative ways of writing. One can wonder whether pictorial notational signs played an important role in the development of early writing systems.

The established reading **TLATOANI** 'king' also bear an intriguing implication for Mesoamericanists (Figure 4.10). This has to do with the arrival of Teotihuacanos to the Maya area as recorded on Tikal Stela 31 and first recognised by Tatiana Proskouriakoff (Proskouriakoff 1993: 4; Stuart 2000). On the left side of the stela, a personage is depicted as a Teotihuacano warrior, with a spearthrower and a rectangular shield in his hands, a mosaic puma headgear on his head, a round mirror and the tails of three carnivores attached to his belt. The hieroglyphic text (J4-L4) mentions the personage's name as **ch'a-ta WAY-na-'a** and identifies him as the vassal of an enigmatic **t'o?-cha?-wa-k'i**, the son of the fourth king from the land of *Ho' Tinam Witz*, who is known today by his Mayan name *Jatz'o'm Kuy* (apparently a translation of his Teotihuacano name).[20,21] Three titles follow the syllabic spelling of the Teotihuacano sovereign, one of these is written as **ko-sa-ka**-"Lifted Hand"-"Woven Throne with Backrest", where the last sign is identical to the Nahuatl sign **TLATOANI** (L2, see Boot 2009: 161). The same design "Weaving" or "Plaiting" is attested in the Maya signs depicting woven objects, for example in the undeciphered sign for 'basket' recorded in the Calakmul murals (Martin 2012: 78, Fig. 43) and a logogram which has been recently interpreted as 'palm' (Prager and Wagner 2016). The sign "Lifted Hand" looks different from the syllables **chi** on Stela 31. It is followed by another enigmatic spelling **ka-che?-k'i** (K3). I suggest that these three syllabic spellings are Mayan transcriptions of foreign names and titles, presumably of Teotihuacano origin. The "Throne with Backrest" sign is at present unknown in Teotihuacan writing and iconography. The language of Teotihuacan script is not firmly identified, although some Teotihuacano glosses can be tentatively interpreted as a variant of Proto-Nahuatl (Davletshin

[20] The symbols for representing Hieroglyphic Mayan that differ from the International Phonetic Alphabet symbols are the following: b' = /ɓ/, j = /x/, ' = /ʔ/, x = /ʃ/, tz = /ʦ/, ch = /ʧ/ and y = /j/.
[21] Recently, David Stuart and Stephen Houston (2018) have proposed the reading of the logogram **TINAM** COTTON. I originally proposed the readings **tz'o** and **JATZ'OM** in 2001.

in press; cf. King and Gómez Chávez 2004; Nielsen and Helmke 2011: 345-349). The sign "Throne" might be a forerunner of the Nahuatl sign under discussion but not necessarily; its semantic reading could have been different in the Teotihuacan script as well. Nevertheless, the similarity of the two signs in terms of their shape and context of use is more than striking.

Conclusions

The main aim of this paper was to demonstrate that the design "Woven Throne with Backrest" is not an iconographic motif but the sign for the long-sought-for title 'king' in Nahuatl hieroglyphic writing. The reading **TLATOANI/TLATOKA** is well supported by glosses in Latin characters in several independent contexts. Probably, the sign has not been recognised as such due to two circumstances. First, it has been interpreted as an iconographic motif because of its pictorial nature. Second, the absence of phonetic complements and substitutions has prevented us from identifying it as forming part of the writing system. It turns out that many Nahuatl signs for titles belong to the functional class of notational signs, which lack the ability to attract phonetic complements and be substituted for syllabic spellings, in both alphabetic and logosyllabic scripts.

Notational signs are important in Nahuatl texts both in terms of their frequency and the semantic fields they cover – dates, tribute items, titles, verbs, etc. The reading value of a notational sign is arbitrary in the sense that a sign can depict a 'throne with backrest' *tĕpŏtzŏhĭkpăllĭ* but is intended to be read *tlăhtŏānĭ* 'king, ruler' and no other signs in the script convey the word *tlăhtŏānĭ*. A corollary of this arbitrariness is that reading values of notational signs should be carefully established and demonstrated on the basis of accompanying glosses and parallel texts. I hope that other works will be dedicated to the decipherment of Nahuatl notational signs in the future. These signs constitute an important part of the system and carry a high functional load in texts, without these our understanding of Nahuatl writing is inadequate.

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Chapter 5:
The *Lienzos de Tlaxcala* & *Quauhquechollan*: The Conquest of Guatemala and Sixteenth Century Nahuatl Hieroglyphic Writing

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The conquest of what is now called Guatemala began in 1524 by a group of Hispanic individuals guided by several Mesoamerican groups who identified themselves as "Indian conquistadors" (see Matthew and Oudijk 2007). In the case of Guatemala, these Indian conquistadores made up a mixed entourage of groups that originate from the Central Mexican city-states of Chalco, Tenochtitlan, Tlatelolco, Texcoco, and Cholula, as well as speakers of Mixtec and Zapotec from Oaxaca, as well as Nahuatl-speaking peoples of Tlaxcala, and Quauhquechollan in what is now Puebla. These groups of "Indian conquistadors" resettled as distinct groups in the newly conquered lands, keeping and preserving their original ethnic identity (Matthew 2017:57). Although these groups shared similar interests, including the acquisition of newly conquered lands, coats of arms, noble status, as well as exemption from taxes and forced labour, they maintained their cultural differences. As late as the eighteenth century, traces of these identities could still be found in Guatemala. However, over the years, the groups had mixed and eventually gained a common identity as "Mexicans". In the end, they also became intermingled with the Maya, Nahua and Xinka who had lived in these lands before the conquest.

Divisions among the Indian conquistadors[1] resulted in constant quarrels. It is also known that as the process of conquest evolved, other Mesoamerican groups joined conquest expeditions in hopes of finding new lands to conquer. For example, when the conquest enterprise was unfolding in Guatemalan territory, the Kaqchikel joined forces with the conquistadors and advanced into what is now Central America, thus mingling with Spaniards, Nahua, Zapotec, and Mixtec warriors. In this process, the Kaqchikel constantly complained over receiving a different treatment than the Tlaxcaltec whom they believed enjoyed better privileges such as exemptions from taxes (Escalante 2004).

In the case of Guatemala, the best known and most widely cited sources to the conquest are the *Cartas de Relación* sent in 1524 by Pedro de Alvarado to Hernán Cortés. Despite being a contemporary description, Alvarado omits many events that took place. Therefore, his information must be complemented by other alphabetic sources that, although written after the conquest, contain descriptions of other events not found in Alvarado's *Cartas*. These alphabetic sources are the *Probanzas de los indios conquistadores de Guatemala, El Salvador, Honduras 1573* (Archivo General de la Nación – AGI), the *Tratado de la ejecutoria de los indios mexicanos 1547* (AGI), by Fernando de Alva Ixtlilxochitl, and Bartolomé de Las Casas, as well as Alvarado's 1529-*juicio de residencia.*

However, it is equally important to take into consideration the versions of the conquest of Central America[2] as recounted by two of the nine groups of Indian conquistadors, the Tlaxcaltec and the Quauhquecholtec, who provided an account of their experiences in the *Lienzo de Tlaxcala* and the *Lienzo de Quauhquechollan*. In this article, I use these two documents to analyse not only the route of the conquest, but also the toponyms recorded by both groups of Nahua-speakers. I also use the documents to analyse more generally the way in which they use Nahuatl hieroglyphic writing, and I discuss the specifics of each of the two scribal schools. For this article, I approach Nahuatl hieroglyphic writing from the vantage of the epigraphic method. This article also contributes to the ongoing work of compiling a sign inventory for the hieroglyphic script (see Table 5.1).

Background

The Lienzo de Tlaxcala (LTLA)

This document was created sometime after 1552 when the council, or *cabildo*, of Tlaxcala petitioned Viceroy

[1] When I refer to conquistadors, I refer to the alliance between Indigenous and Spanish forces.

[2] Although the *Lienzo de Tlaxcala* presents conquests in Central American territory, I only analyse conquests that took place in Guatemala, since the *Lienzo de Quauhquechollan* only presents conquests in this Central American country.

Mendoza to reproduce on a large cotton fabric the wall paintings that were found in the City Hall—where the *Cabildo* convened.[3] The request was met, and three copies were prepared. The first copy was sent to the King of Spain (Charles V), the second was sent to the Viceroy in Mexico City, and the third copy remained in the City Hall of Tlaxcala where it was preserved until the nineteenth century.

From these three originals new copies were prepared in the intervening centuries. Two of the best-known copies include the lithography of Genaro López with texts by Alfredo Chavero (1892), and the copy made by Juan Manuel Yllanes (1773).[4] These two copies can be divided into two significant sections. The upper section includes the *Alegoría* ('allegory'), and the lower part describes the Tlaxcaltec-Hispanic alliance and the conquests carried out by the ally army depicted in individual frames (see Chavero 1892) (Figure 5.1).

Another copy of the wall paintings in the *Cabildo* of Tlaxcala is that completed in 1584 by Diego Muñoz Camargo.[5] This copy was elaborated to illustrate the *Relaciones Geográficas* de Tlaxcala and was sent to the King of Spain. I use this copy to analyse the Nahua hieroglyphs since it contains the most numerous examples of recorded conquests, including those in Central America.[6]

The Lienzo de Quauhquechollan (LQUA)

The *Lienzo de Quauhquechollan* (LQUA) is a document that describes the alliance (1520) and the conquests carried out by the Quauhquecholtec-Spanish army in Guatemala from 1527 to 1530. These conquests were commanded by Jorge de Alvarado, Pedro de Alvarado's brother. The *Lienzo de Quauhquechollan* was painted in the years 1530-1540. It had the same purpose as the LTLA, which was to gain recognition for the participation in the conquest. This document was manufactured from a cotton fabric measuring 235×325cm (Asselbergs 2018). In a similar fashion to the LTLA, the LQUA begins its account with an allegorical representation of the alliance (the left part of the *lienzo*) followed by the route taken by the conquistadors, in this case represented by a map over the Guatemalan territory. The right side of the *lienzo* has regrettably been cropped just where the territory of El Salvador begins (Figure 5.2).

[3] Estimated to a measure of approximately 2×5m.

[4] For more on these copies, see Luis Reyes (1993), Nazario Sánchez (2004), and Baltazar Brito (2016).

[5] It is also known as the *Glasgow Manuscript* because it is housed at the University of Glasgow in Scotland.

[6] See: : https://lienzodetlaxcala.unam.mx/manuscrito-de-glasgow/ [accessed 22 June 2022]

Hieroglyphic Writing in Nahuatl

The two documents analysed here (the LTLA and the LQUA) have several features in common. First, they represent the conquest of the same territory (Guatemala). Second, both communities, the Tlaxcaltec and Quauhquecholtec, were Nahua communities that spoke the same language and shared the same hieroglyphic writing system.

For this section, I use the following reference works for analysing Nahuatl hieroglyphic writing: Lacadena (2008), Davletshin (2009, 2021), Velásquez García (2009, 2019), Zender (2013), Cossich (2014, 2018), Valencia (2021), and others.[7]

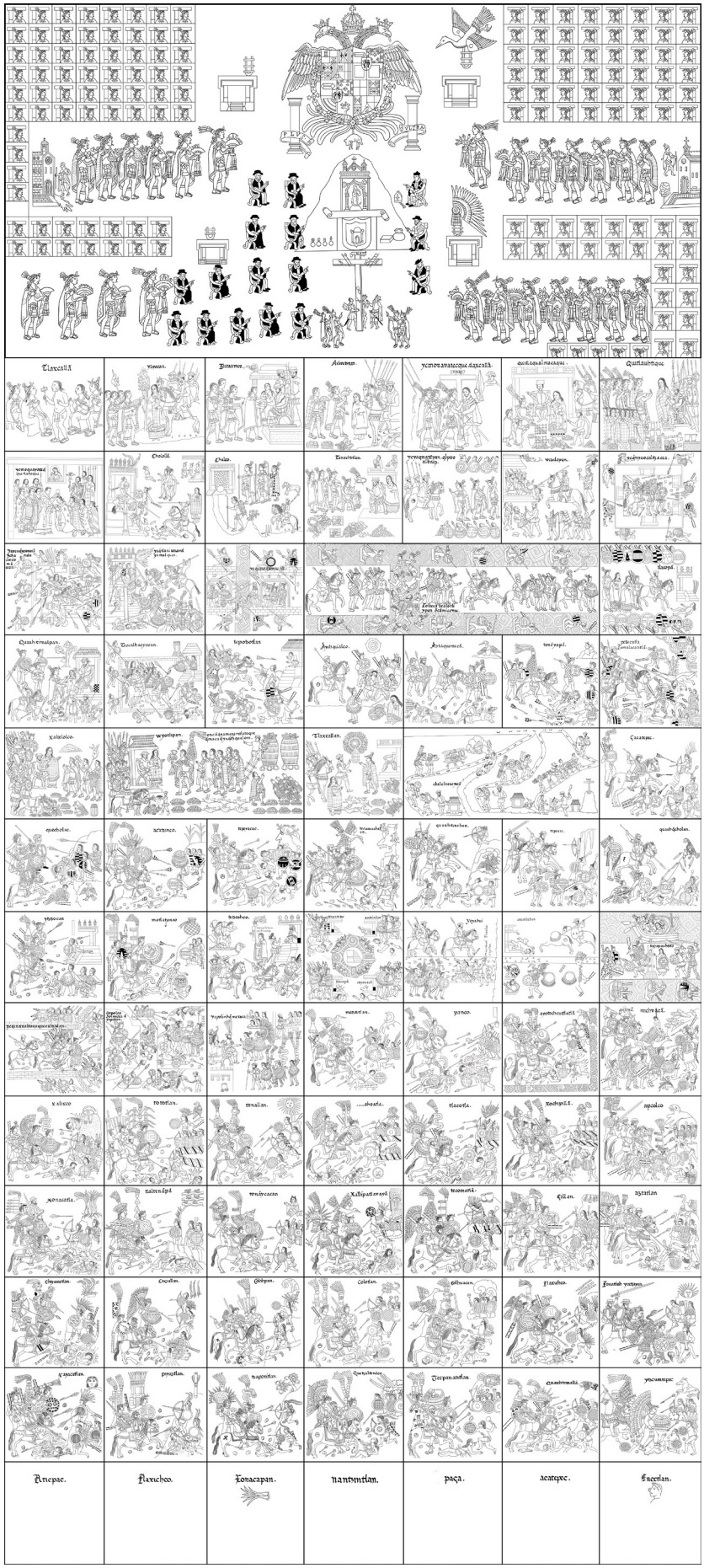
At present, only few documents have been studied from an epigraphic standpoint. In 2018, I carried out the analysis of all the hieroglyphs of the *Lienzo de Tlaxcala* (Cossich 2018). In the present chapter, I focus solely on those glyphs that are connected to what is now Guatemalan territory in order to establish comparisons with the route and place names observed on the *Lienzo de Quauhquechollan*. As mentioned above, the LQUA does not include El Salvador.

Florine Asselbergs has read the glyphs of the LQUA and in several instances compared them with those on the LTLA. However, her analysis was based on semasiographic principles. For this essay, I will approach the glyphs from a grammatological perspective. In doing so, I not only look to highlight the differences between the two groups of scribes, but the readings proposed here also necessitate a revised discussion of the route followed by each cultural group. For the identification of place names from the LQUA, I take as a starting point the interpretations of Asselbergs, although sometimes I complement my identifications with the contributions made by Ruud van Akkeren (2007). Occasionally, I draw on the work by Chinchilla Mazariegos and Genovez Castaneda (2008). This is helpful for identifying specific places, since the LQUA does not have annotations in Latin lettering or script.

The following section is divided into three parts. The first is dedicated to toponyms, the second to the semantic determinatives and to the infixes—a specific trait of the LQUA[8]—and the third part treats the

[7] The conventions for analysing the hieroglyphic writing are: phonetic signs are in lowercase, logograms are in uppercase, phonetic complements are in parentheses; transliterations for a hieroglyphic compound are separated by a hyphen (for an infixed sign '+' is used instead of a hyphen). Semantic determinatives in English are noted in superscript; transcribed forms are presented in Italics; restituted phonemes are rendered in square brackets; annotations are between angled brackets <...>; sources are in parentheses (...).

[8] For the rules and working principles of the Nahuatl hieroglyphic writing system, see Lacadena (2008), Velásquez García (2019), and Davletshin (2021).


Tlaxcalla
Tenuchtitlan
Quauhtitlan
Tlaxcallan
Tlacopan
Xaltelolco
Tlatilolco
Tepeaca
Tlaxcallan
Tlaxcallan
Tlaxcallan

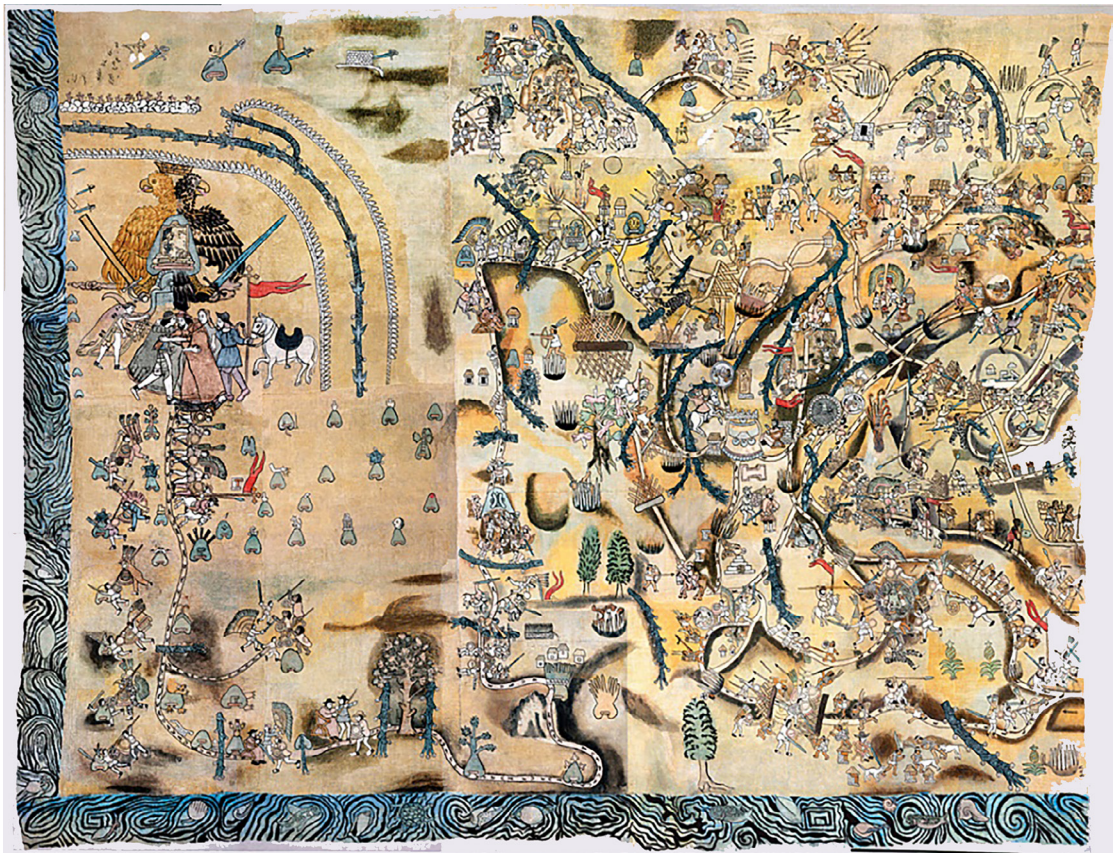


Figure 5.2: *Lienzo de Quauhquechollan* (public domain image).

anthroponyms found in both documents. My objective is to analyse the writing and investigate whether there are differences in the two scribal traditions. If so, the aim is to identify the traits that stand out and define these two traditions despite the fact that they use the same repertoire of signs; a repertoire that is also found in Mexica documents and monuments.

The LQUA contains twenty-two place names related to the conquest of Guatemala. Five signs are interpreted by Asselbergs as toponyms. However, I disagree with this interpretation and further argue that these are images and not hieroglyphic writing proper (see Table 5.1). In two cases, I have doubts about the correct reading. Finally, I present one anthroponym, which will be described later in the chapter. The LTLA has thirty place names related to the conquest of Guatemala. In these pages, no hieroglyphic anthroponyms[9] are found (see Table 5.1).[10]

[9] The anthroponyms of the LTLA are found in the section that represents the alliance between the Tlaxcallans and the Spanish. These include the Tlaxcalan indigenous names of Citlalpopoca and Maxixcatzin, and the anthroponym Tonatiuh for the Spanish Pedro de Alvarado. The *Texas Fragment* also contains anthroponyms (i.e. Tlehuexlotzin, Xicotencatl, and Maxixcatzin), see Brotherston and Gallegos (1990) as well as Sandoval Villegas and Velásquez García (2021).

[10] For the complete analysis of the hieroglyphs of three of the copies of the *Lienzo de Tlaxcala*, see Cossich (2018).

The Toponyms of the Lienzo de Tlaxcala and the Lienzo de Quauhquechollan

I begin this section with the LTLA since the scribes of this document had a very clear way of writing toponyms. First, it is noticeable that from these 30 glyphs there is not a single use of a phonogram. The toponyms are composed by one or two logograms and a semantic determinative, which is always HILL. Of these thirty cases, fourteen are composed by a logogram and a semantic determinative, and fifteen are composed of two logograms and a semantic determinative. Of the fifteen compounds that use two logograms, one is infixed (**SITLAL**+**APAN**- HILL, case 28, Figure 5.3). There is one toponym that I have not been able to read (Siquinala, case 25), since I am not sure whether this is a Maya or a Nahuatl word and the glyph is unclear.[11]

The LQUA presents us with more variation in the sign inventory. There are signs that are rarely used or non-existent in other documents (as for example **TOTONIK** or **CHICHIKAS**, cases 7 and 8, Figure 5.4a-b), and signs are generally more difficult to read. The situation is

[11] It could refer to the word *tz'ikin* 'bird' in various Maya languages, or alternatively to **TZIKI** from *tziquitzin* 'a little bit' or from *tziquimoloa* 'to pick (leaves or vegetables)' in Nahuatl (see the *Gran Diccionario Náhuatl*: https://gdn.iib.unam.mx/) [accessed 22 June 2022]

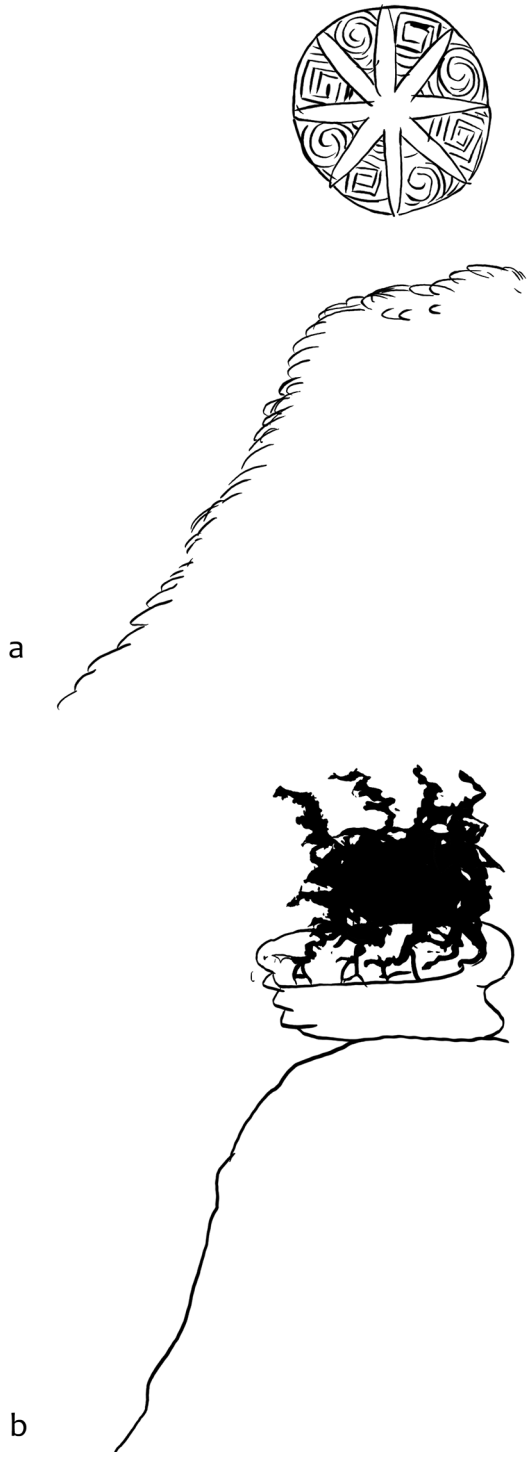


Figure 5.3: *Lienzo de Tlaxcala.*
a) SITLAL+APAN-HILL, case 28. **b)** Siquinala, case 25 (this and all drawings by Daniela H. Molina, unless otherwise specified).

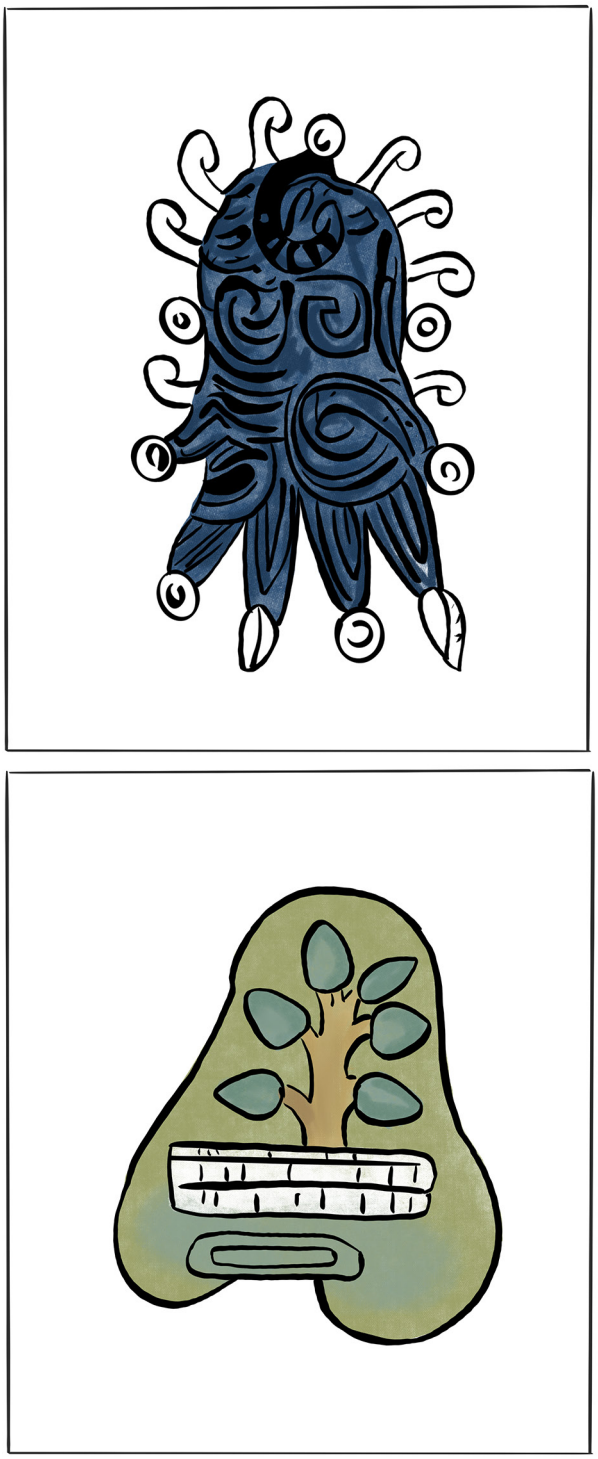


Figure 5.4: *Lienzo de Quauhquechollan.*
a) Totonicapan (**TOTONIK+APAN**), case 7. **b)** Chichicastenango (**CHICHIKAS-TENAN**$_2$+HILL), case 8.

complicated further by the fact that this document does not have any of the original annotations that it supposedly had when it was manufactured (Asselbergs 2007). Of the twenty-two toponyms, we have thirteen cases wherein only one logogram is used, and of these, nine are accompanied by a semantic determinative. In five of these nine cases, the logogram is infixed within the semantic determinative HILL. Three of the twenty-two toponyms are composed of two logograms and a semantic determinative, and in two of these cases, the logogram is infixed. Three toponyms use two logograms. There is only one example of a toponym with three

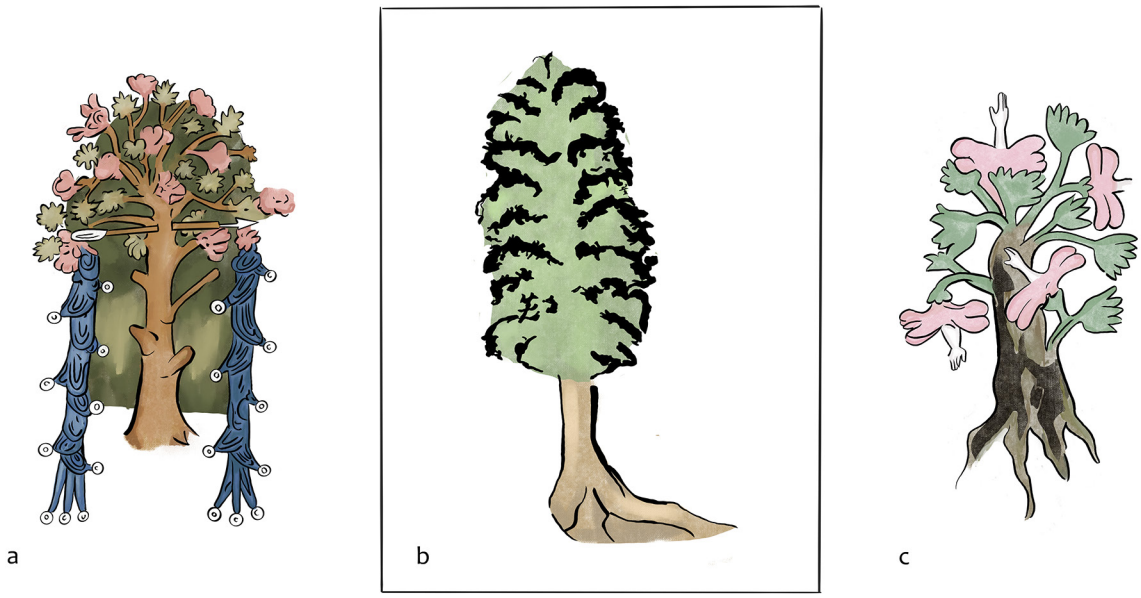


Figure 5.5: *Lienzo de Quauhquechollan*.
a) Case 1, **b)** Case 31, **c)** Case 47.

logograms. One toponym is composed by a phonogram and the semantic determinative. Finally, one toponym consists of one phonogram with one logogram and the semantic determinative; here, the phonogram fulfils the function of a phonetic complement.

In sum, the toponyms of the LTLA are relatively straightforward, whereas those of the LQUA present more combinations of signs and makes use of infixes. Infixes are only found once in the LTLA and not often found in other Nahua documents of the same period. Both documents use the semantic determinative HILL, a point I return to later in the chapter.

As I mentioned earlier, Asselbergs (2018: 258) offers readings of some of the signs in the LQUA as toponyms; an interpretation with which I do not agree. These three examples are Retalhuleu (case 1), Pochuta (case 31), and Macpalxochitl (case 47)[12] (see Figure 5.5). Asselbergs notes that the readings of these glyphs are inconclusive, and therefore she does not provide a location for Macpalxochitl. After having analysed the map and noted that all three are trees that are disassociated from the semantic determinative HILL, I find it doubtful that these three trees refer to actual places. These could just as well refer to details in the landscape. In this case, the three trees are, much like the representation of the Volcán de Fuego, part of the landscape and thus not hieroglyphic writing, although they clearly facilitate the interpretation of the geography. Other examples of vegetation in the map include two pineapples lying on the ground. These should not be read or interpreted as toponyms either. Rather, they should be seen as references to local flora pertaining to distinct zones. It is tempting to think that in the case of Pochuta (case 31) the tree represents a specific place where events took place just south of Chimaltenango (where the glyph can be read clearly). However, this scenario remains unlikely since none of the other trees, not even Retalhuleu, can be read as toponyms. For the case of the sign that Asselbergs reads as Retaulheu, I am inclined to propose another interpretation. The arrow found in the upper part of the sign can be interpreted as dividing the tree and thus refer to the fracturing of the tree—a pivotal moment in Mesoamerican cosmovision (see case 1 in Table 5.1).

In the LQUA there are two ways of representing places: With the semantic determinative HILL, and with an image of a hill represented more naturalistically as in the cases of Teculutlan[13] (**TEKOLO** from *tecolotl* 'owl', case 41) or Cochomatlan (**KOCHO** from *cocho* 'parrot', case 42, Figure 5.6). In these two latter cases, the scribe chose to merge the representation of the hills with the two logograms, as Asselbergs (2018: 283) also noted.

The identification of the various toponyms in the LQUA can benefit from analysing them as hieroglyphic writing, or at least this method can be used to question some of the previous readings, for example when Asselbergs (2018) and van Akkeren (2007) interpret the

[12] Macpalxóchitl (Asselbergs 2018: 258).

[13] This sign **TEKOLO** also includes a sword that points and apparently pierces the owl. This is a sign of conquest. However, in the LQUA this sign only appears in toponyms in the upper left corner, in four towns that refer to geographical zones in Quauhquechollan and in Teculutlan in Guatemala.

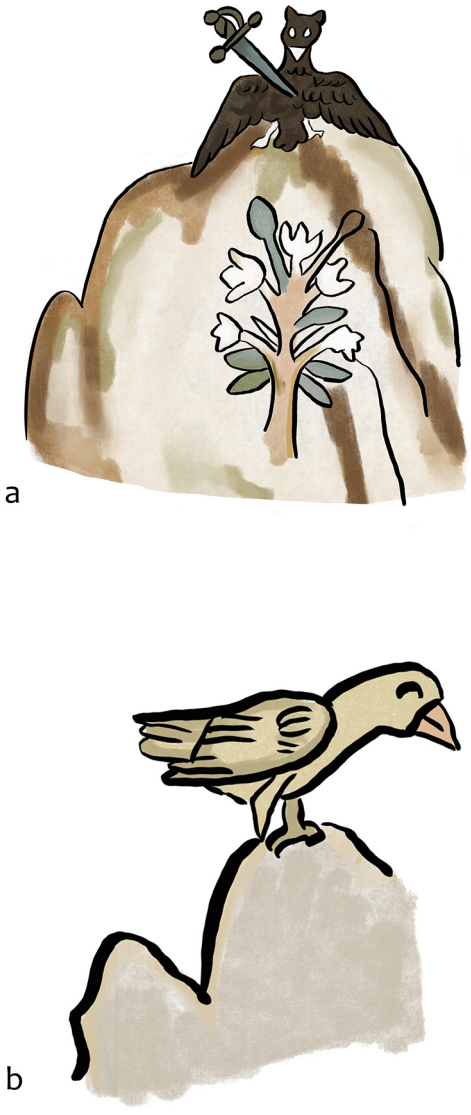


Figure 5.6: *Lienzo de Quauhquechollan.*
a) Teculutlan, case 41. **b)** Cochomatlan, case 42.

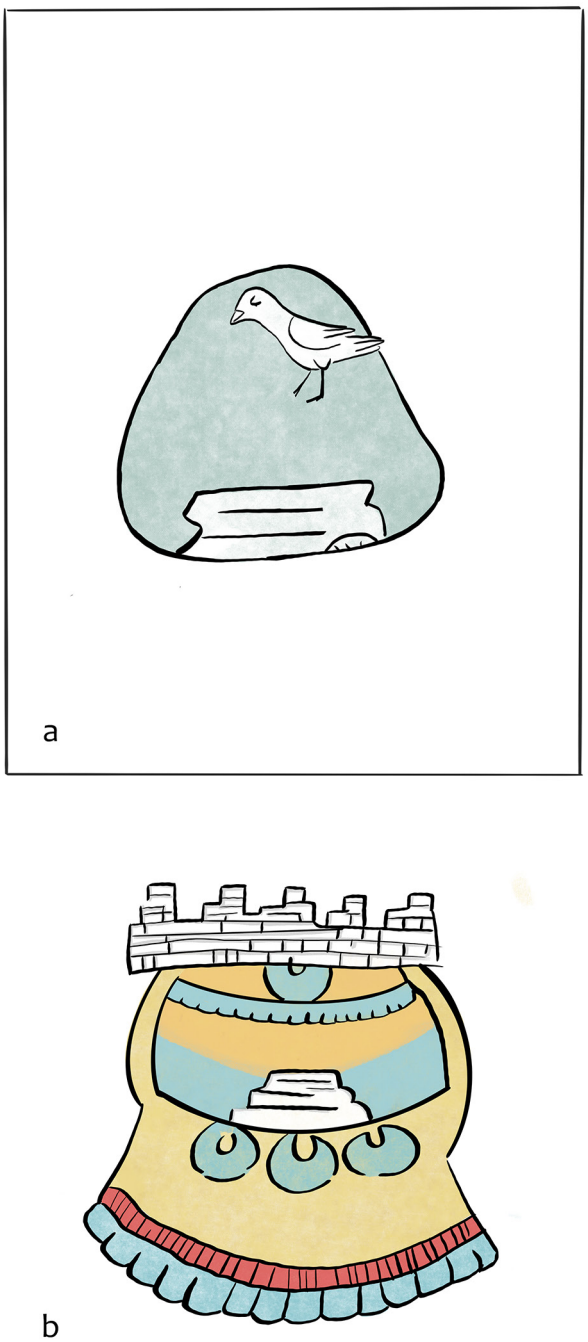


Figure 5.7: *Lienzo de Quauhquechollan.*
a) Alotenango/Alotepec, case 33. **b)** Chimaltenango, case 11.

bird-sign, close to what they believe to be Escuintla, as Alotenango (case 33, Figure 5.7a). This example is composed of the sign HILL and, within it, a bird (*alotl* 'bird'), as well as a sign which could be a fortress wall, or *tenantli*, resulting in the reading **ALO-TENAN**$_2$-HILL. Another example is case 11, Chimaltenango, composed by **CHIMAL** from *chimalli* 'shield' and **TENAN**$_1$ from *tenantli* 'fortress wall'. As is seen in Figure 5.7b, this toponym has the sign **TENAN** on top of a shield, as well as another sign within the shield, which seems to be similar to the **TENAN**-sign in Figure 5.7a. However, it could also be a 'pyramid'-sign that we find infixed into the HILL-sign and the **CHIMAL**-sign. Another example of the "pyramid"-sign infixed into another sign is the toponym of Quauhquechollan (see Figure 5.2, the upper left corner) where two eagles hold a HILL-sign with a "pyramid"-sign and a coat of arms infixed.[14] As we can see, neither of the words **TENAN** and **TETEL** are reflected in the name of Quauhquechollan, which means that the function of the "pyramid"-sign is not

[14] The toponym of Quahquechollan can also be seen in the *Mapa Circular* where the name consists of an eagle with a centrally placed HILL-sign that has the "pyramid"-sign infixed. https://mapas.uoregon.edu/quauhc/elements/quauhc/000#overlay-context=quauhc/elements/quauhc/000 [accessed 22 June 2022]

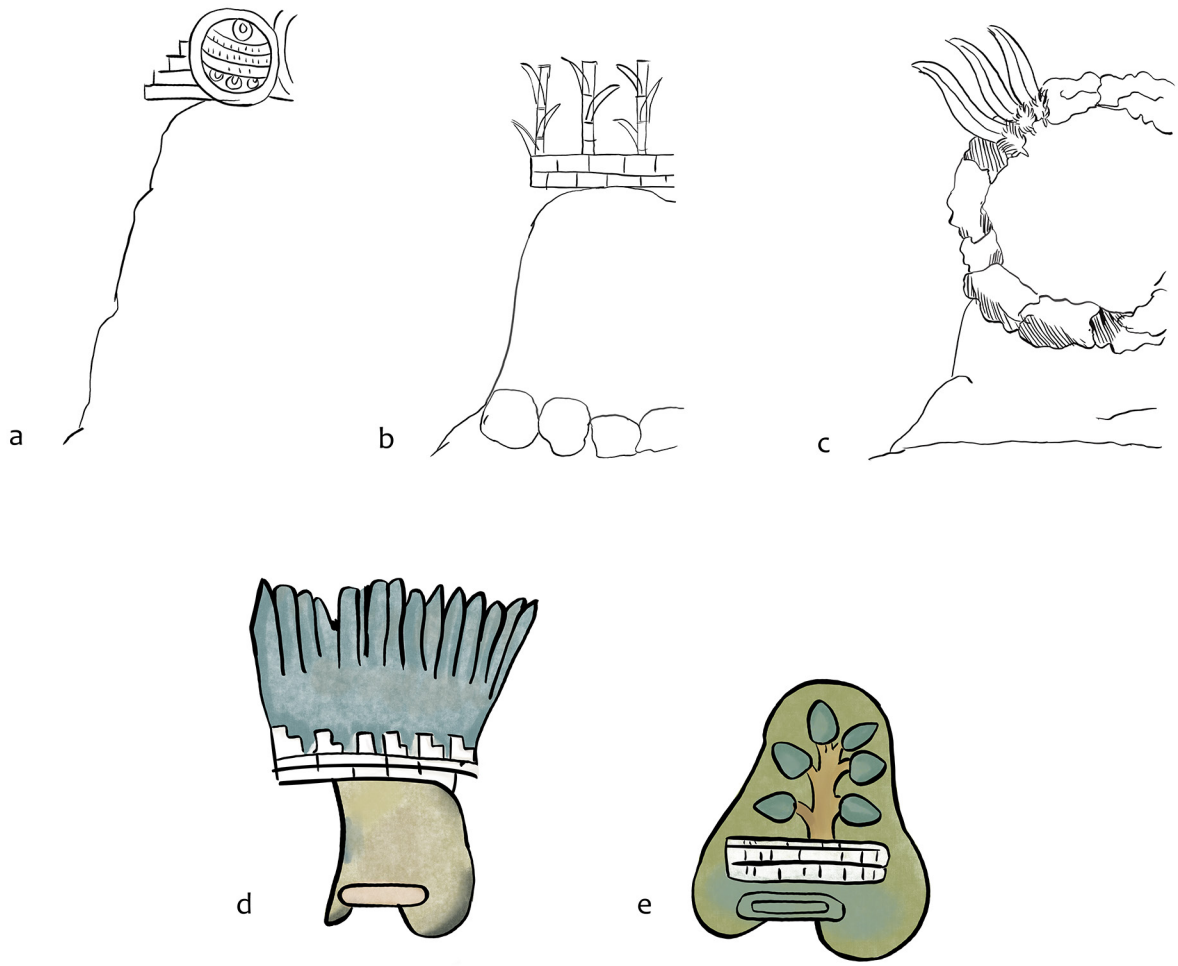


Figure 5.8: *Lienzo de Tlaxcala.*
a) Chimaltenango, **CHIMAL**-**TENAN**$_1$-HILL, case 11. **b)** Acatenango, **AKA**-**TENAN**$_2$-HILL, case 29. **c)** Quetzaltenango, **KETZAL**-**TENAN**$_3$-HILL, case 4. *Lienzo de Quauhquechollan.* **d)** Quetzaltenango, **KETZAL**-**TENAN**$_1$+HILL, case 4. **e)** Chichicastenango, **CHICHIKAS**-**TENAN**$_2$+HILL case 8.

very clear in either the Quauhquechollan-sign or the examples just presented (Figure 5.7).

We may then ask whether the toponym presented in Figure 5.7a is really Alotenango, or whether it could be Alotepec, a small town near Sinacamecayotl located, in turn, six leagues from Esquintla (Orellana 1995: 131, 137).

The sign **TENAN** stands out in these two documents. In the LTLA we find three graphic variants of this sign, whereas there are only two variants in the LQUA. In Alfonso Lacadena's sign catalogue (see Lacadena García-Gallo and Wichmann 2011: 5-37), the variant **TENAN**$_2$ found in the LTLA and the LQUA appears as either the **PAN** from *pantli* 'wall' or **XAN** from *xamitl* 'adobe' (Lacadena García-Gallo and Wichmann 2011: 19) (Figure 5.8).

We have one example of the use of three logograms, as mentioned above. Case 13 reads **TEK^{W}-TEOPAN-CHIMAL?** (Figure 5.9). Asselbergs (2018: 258) compares this sign to the LTLA and interprets it as another way of writing Chimaltenango. However, in the LQUA, **TENAN** is not written with the "pyramid"-variant, which makes me think that it refers to Tecpan Guatemala, written with the combination of the signs **TEK^{W}** and **TEOPAN**.[15] Thus, as we have seen in the examples of Alotenango/ Alotepec, Chimaltenango (see Figure 5.7), and in the name of Quauhquechollan itself, this "pyramid" is likely a reference to a settlement rather than an actual logogram.

A particular sign is found within the LQUA, which I suggest might be a toponym (Figure 5.10a). It is located on the map between the regions of Olintepeque, Chichicastenango, and Las Verapaces. Placed on top of a river, the compound consists of two signs, a human

[15] Margarita Cossich Vielman "El nombre de Guatemala en la escritura jeroglífica en náhuatl." Paper presented at the *XXXII Simposio de Investigaciones Arqueológicas en Guatemala 2018*.

Figure 5.9: *Lienzo Quauhquechollan*. **TEK^{W}-TEOPAN-CHIMAL?**, case 13.

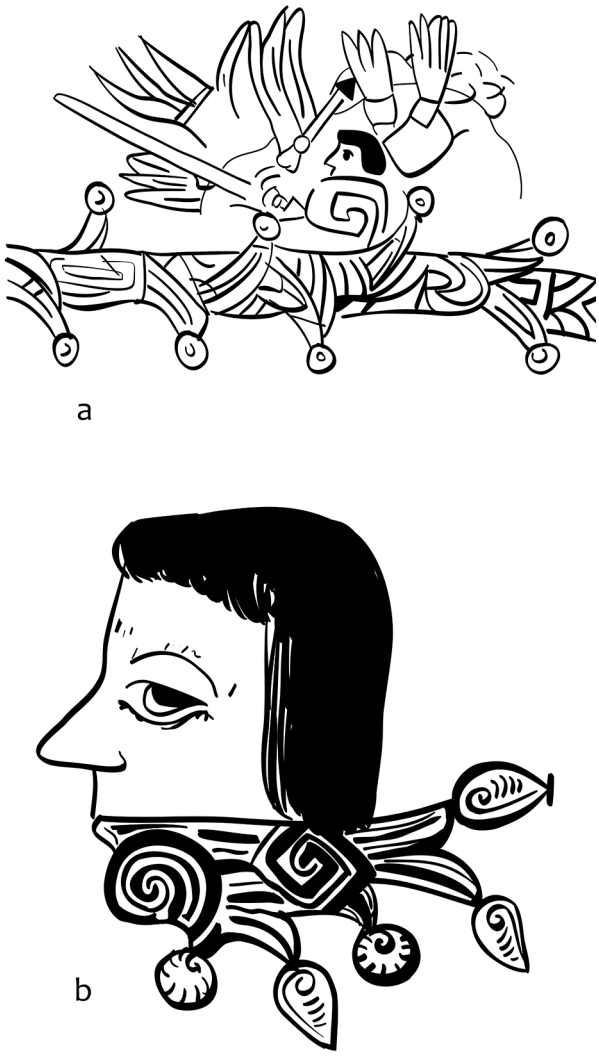


Figure 5.10: Comparison between the **a)** *Lienzo de Quauhquechollan* and **b)** the *Matrícula de Huexotzingo*.

head and a water-sign placed in the mouth of the head. This combination of signs is also found in the *Matrícula de Huexotzingo* where it is associated with the town of Atenco (Figure 5.10b). At this juncture, I have not been able to identify a town in this part of Guatemala that bears this name or one that bore it in the sixteenth century.

Semantic Determinatives: The case of the HILL-sign

As Rogelio Valencia (2021) has noted, semantic determinatives in Nahuatl hieroglyphic writing were first described by Aubin (2009 [1884]), followed later by other scholars.[16] Aubin noted:

> Behind the bust or the head of a man, or on a generic symbol for *city* or *village*, figurative signs express the name of the person or of the place in question. These figurative signs, which will be studied in detail, constitute Mexican writing. (Aubin 2009 [1884]: 16-17; translation by the author)

This author identified, without providing a specific name for them, the classifiers of BUST and HUMAN HEAD next to the symbol for city or village, and set them apart from what he called "figurative signs." He thus differentiated these classifiers from those signs that can be read and are associated to sounds.

The two signs mentioned by Aubin, which we now call semantic determinatives, have been labelled by Valencia (2021) as MAN, HOUSE, and supplemented by more recent additions such as WOMAN, MARRIAGE, NOBLEMAN, OLD MAN, OLD WOMAN, BOY, GIRL, BABY BOY, BABY GIRL, DEAD BABY GIRL, DEAD MAN, DEAD WOMAN, BLIND MAN, WIDOW, WIDOWER, CONQUEST, and SPEAK. The HILL-sign should be placed in this group of semantic determinatives.

In my previous works (Cossich 2014, 2018), I did not include readings of the semantic determinatives. However, having analysed the hieroglyphic writing in

[16] Valencia mentions Marc Zender (2013), Davletshin (2017), Whittaker (2018: 180-181), Williams and Harvey (1997: 21-23), Williams and Hicks (2011: 25-26), and Cossich (2014: 43). Prem (2008: 22) also made this point noting that the logogram **TEPE** referred to a semantic determinative.

the two *lienzos,* I now suggest that the HILL-signs form part of the sign repertoire and should be transliterated as semantic determinatives. In the following, I therefore mark the semantic determinatives following established epigraphic conventions, providing the gloss in English with capital letters in superscript.

Semantic determinatives are signs that have two values and can appear in two different contexts, as either logograms which are read or as semantic determinatives that imbue meaning. One way of knowing that a logogram functions as a semantic determinative are the cases wherein the sign is represented in the Latin transcriptions, whereas in other cases it is not. For example, the HILL sign is part of the toponyms for Zapotitlan and Suchitepequez (case 2 and 3, Figure 5.11). If the sign functioned solely as a logogram, it would be read in both examples, and could thereby be rendered in the transcription, which it is not.[17]

One fundamental difference between the LTLA and the LQUA is that while the semantic determinative HILL is used consistently in both documents, in the LQUA it is omitted in cases where the toponym is associated with water.

The three toponyms associated with water in the *LQUA* are Totonicapan (case 7, see Figure 5.4a), Petapa from **PETA** *petatl* 'petate', and **APAN** from *apan* 'river' (case 22, Figure 5.12a), and Quilizinapa, from **KILI** from *quiliton* 'small parrot' and **APAN** from *apan* 'river' (case 34, and Figure 5.12b). In each case, these three toponyms have two logograms, and one of these is invariably associated to water, and is disassociated from a HILL–sign. There can be various explanations for this, one being that the "water"-sign is itself a semantic determinative and thus has two values, as cueing the logogram **APAN** and as the semantic determinative RIVER. The other explanation is that as the toponyms may have represented places that were associated with water, the scribe chose to combine this characteristic of the landscape with hieroglyphic writing.

Although there are toponyms that combine the logogram **APAN** with the semantic determinative HILL among the signs associated with the Chiapanec territory, none are found in the part that deals with Guatemalan territory (Figure 5.12c). In contrast, in the LTLA, we have two examples of infixes associated with the sign for 'river' (see Figures 5.3a & 5.13).

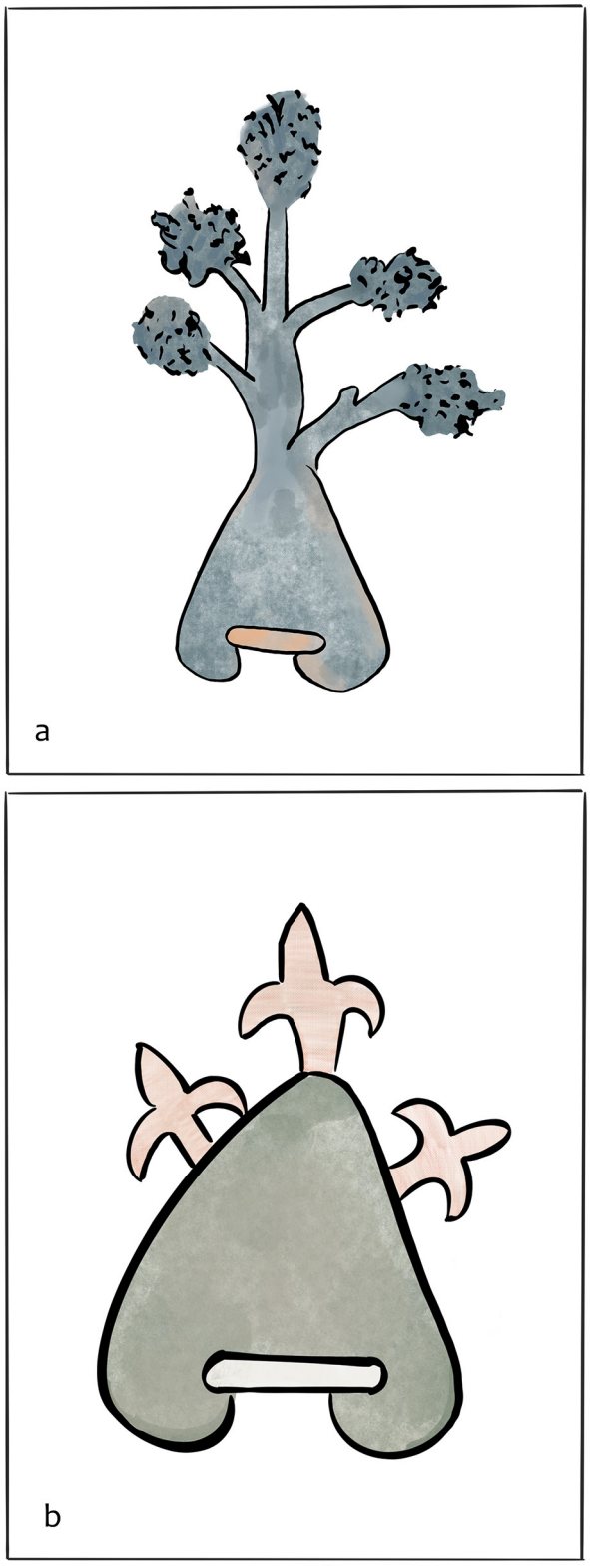


Figure 5.11: *Lienzo de Quauhquechollan.*
Semantic determinatives HILL in the compositions
a) Zapotitlan (**TZAPO**+HILL), and **b)** Suchitepequez (**XOCH**-HILL).

[17] This detail has already been noted for the *Lienzo de Quauhquechollan* by Chinchilla Mazariegos and Genovez Castaneda (2008: 109) who state that the hill-sign refers to a generic place or mountain. However, they do not discuss its function in the writing system.

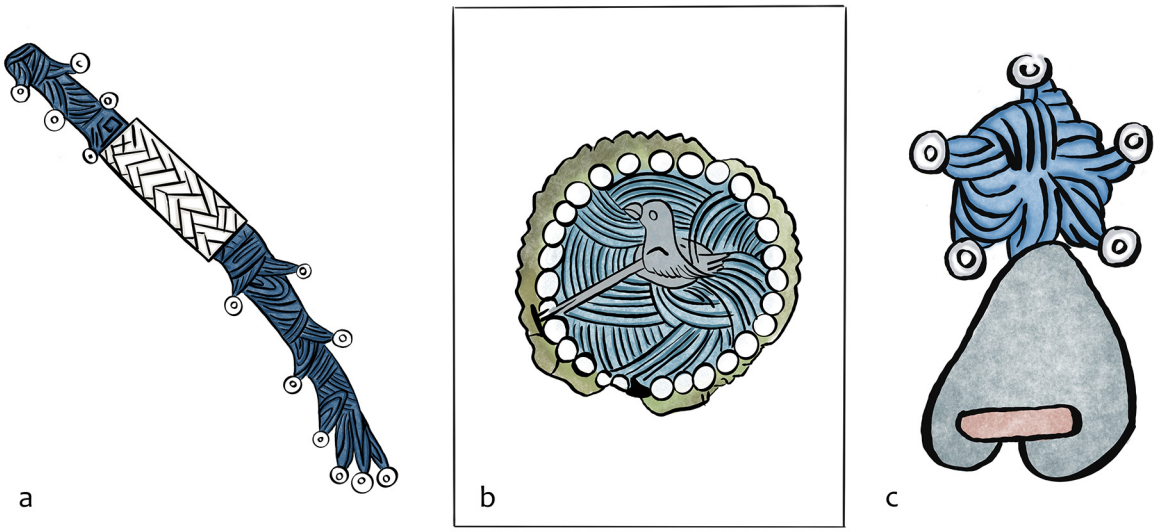


Figure 5.12: *Lienzo de Quauhquechollan.*
a) Petapa, **PETA**+**APAN**, case 22. **b)** Quilizinapa, **KILI**+**APAN**, case 34. **c)** **APAN**-HILL.

Infixation as another Distinctive Trait of the Lienzo de Quauhquechollan

The hieroglyphic compounds of the *Lienzo de Tlaxcala* can be said to be very similar to the writing found in documents such as *Codex Mendoza*. In contrast, the *Lienzo de Quauhquechollan* has enough distinctive traits to propose a greater likeness to documents such as the *Historia Tolteca Chichimeca* or *Codex Telleriano-Remensis*.

One of the distinct characteristics of the LQUA is the use of infixes. Whereas the LTLA only has one example of infixation (see Figure 5.13), the LQUA contains eleven examples, representing half the toponyms. The presence of infixes is not very common in Nahuatl hieroglyphic writing.[18] Illustrative examples include the case of Coyoacan as represented in *Codex Mendoza* with the logograms **KOYO**$_1$+**KOYO**$_2$ (Whittaker 2009: 62, 67), and by the case of **TOTO**+HILL (Figure 5.14) in the *Codex Telleriano-Remensis* (Prem 2008: 23). An excellent example of infixation can be seen by comparing the two distinct ways in which the name of the town Quilizinapa is written in the LTLA and the LQUA respectively. In the LTLA, the sign **KILI** is placed atop the sign **APAN**, whereas in the LQUA, the sign **KILI** is infixed in the **APAN** sign (Figure 5.15). Another characteristic is the fusion of the sign HILL with other logograms, as a type of infixation (Figure 5.16).

In contrast, we have a slightly later example deriving from the *Título de Santa María Ixhuatán* (Figure 5.17), which in one of its folios presents a row of mountains, all of them accompanied by annotations providing their names. In the middle of the row of mountains, there is a white hill with a sign placed inside it. This

Figure 5.13: *Lienzo de Tlaxcala.*
Tzontecoapan, **TZONTEKO**+**APAN**-HILL, case 23.

[18] See Cossich (2014: 112).

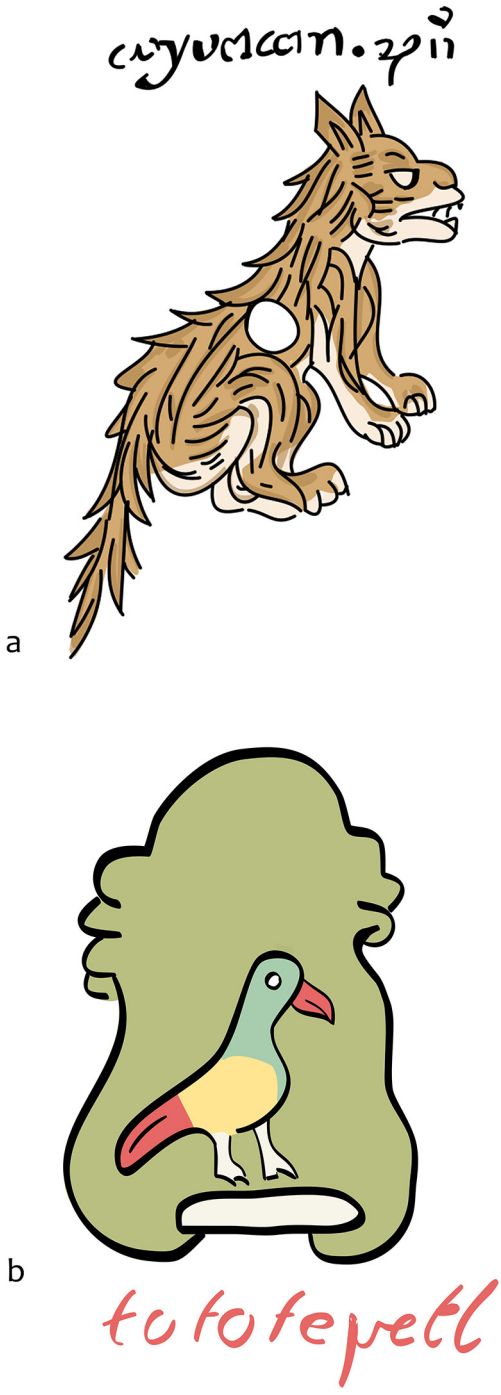


Figure 5.14: Infixes.
a) KOYO$_1$+KOYO$_2$. <coyoacan> (*Codex Mendoza*). **b)** TOTO+$^{\text{HILL}}$. <tototepetl> (*Codex Telleriano-Remensis*, fol. 25r.).

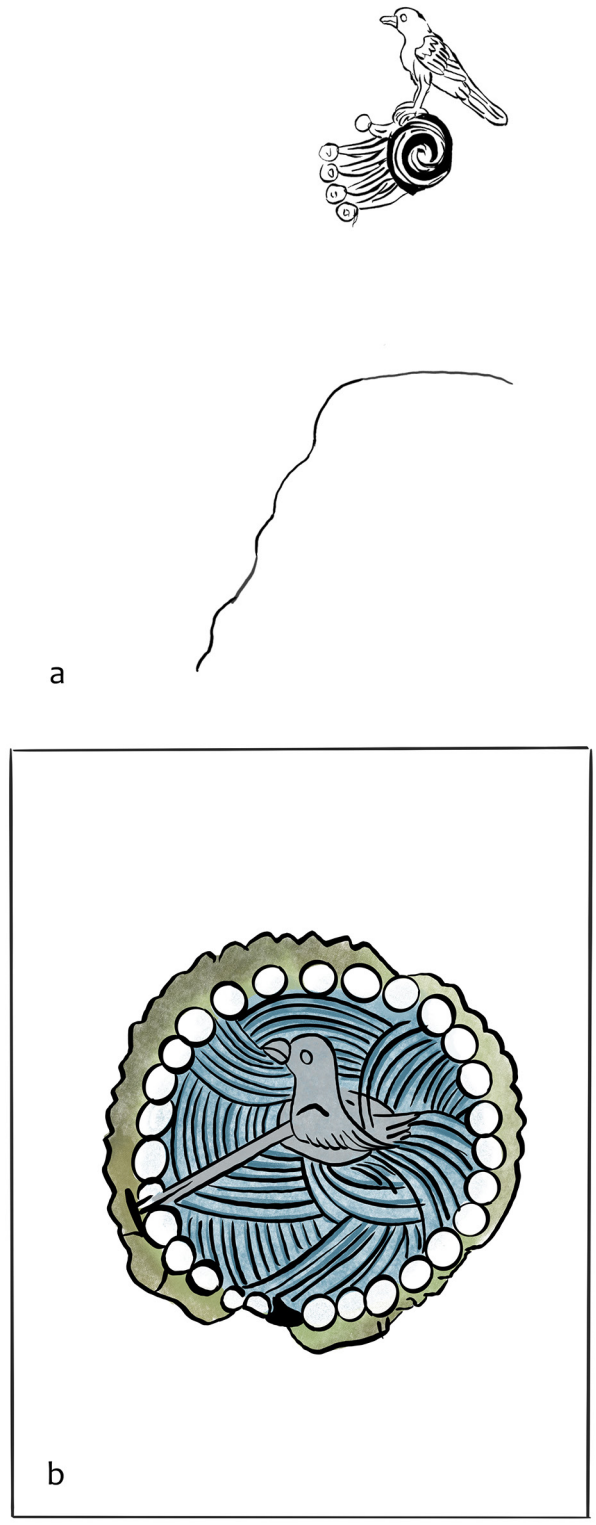


Figure 5.15: Quilizinapa, caso 34.
a) *Lienzo de Tlaxcala.* **b)** *Lienzo de Quauhquechollan.*

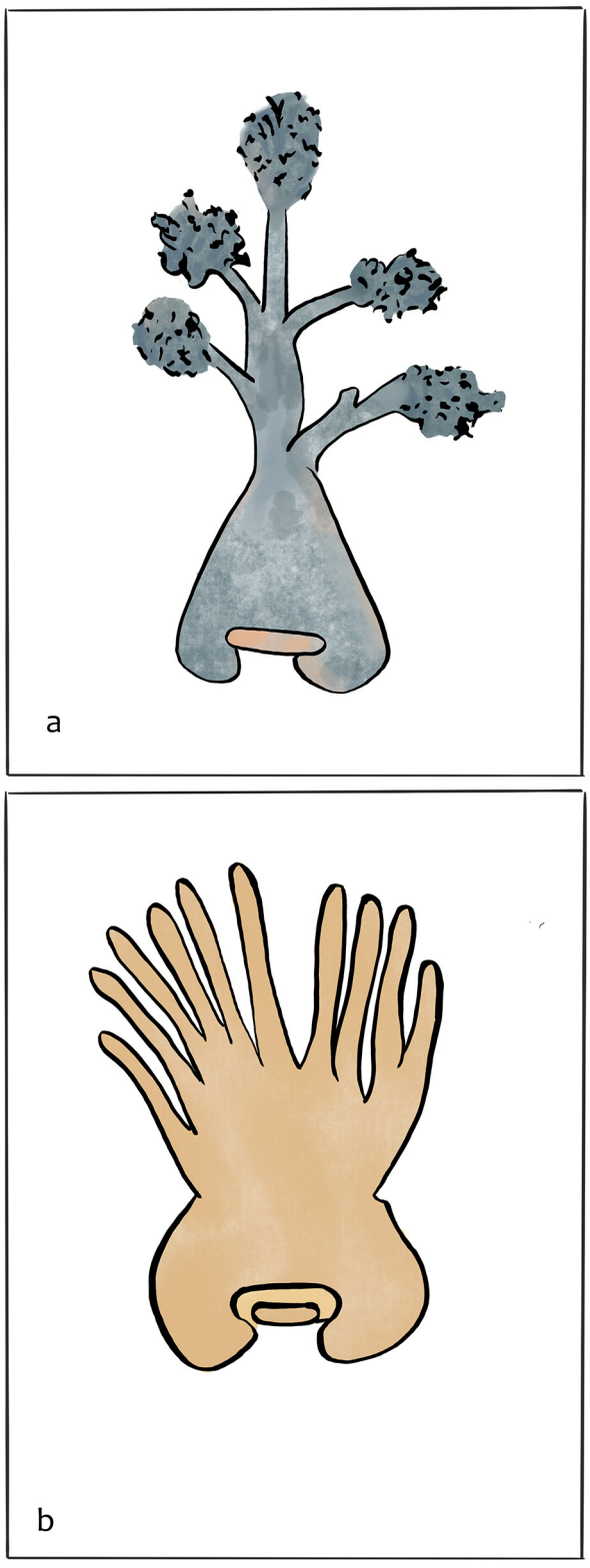


Figure 5.16: *Lienzo de Quauhquechollan.*
a) Tzapotitlan, **b)** Acatenango.

Figure 5.17: *Título de Santa María Ixhuatán.*
'Bird'-sign inside a 'hill'-sign (similar to folio 25r in the *Codex Telleriano-Remensis*).

could be an infixed "bird" sign similar to the examples in the *Codex Telleriano-Remensis* (Figure 5.14b) and from the *Lienzo de Quauhquechollan* (see Figures 5.16 and 5.18). Incidentally, this sign is not annotated, and does not appear in the associated transcription. Further, it is interesting to note that in the row of mountains, the central white hill is preceded by a mountain annotated as <*cuilotepet*> that may derive from [ta]cuiloa 'write'.[19] However, the bird in profile-view found in the centrally illustrated toponym, is very similar to the birds in the two documents just mentioned. Another thing that I have noted in this document (Romero and Cossich 2015: 1233), is that in the row of mountains both the locatives *–apan* and *–tepetl* are found, as seen, for example, in the annotation <*tepet xotiape, zeloapan, zapoapan, cuilotepec* [space] *zapotepet*>. This recalls case 10 of the toponym Comalapa that is found in both LTLA and LQUA where the sign HILL appears rather than the sign 'water', which is, however, reflected in the annotation or transcription.

The Anthroponyms in the Two Lienzos

In the two documents, very few examples of anthroponyms are found. The document with the most anthroponyms is the *Lienzo de Tlaxcala*, although not in the part that deals with the conquest of the Guatemalan territory. The anthroponyms are found both in the *Lienzo de Tlaxcala* and in the *Texas Fragment*. The former contains the names of the governor Maxixcatzin from Ocotelulco. This name is represented using the sign **A** from *atl* 'water', here used as a phonogram, that emanates from Maxixcatzin's hand—which itself is the sign **ma** from *maitl* 'hand'. Such a combination of glyphs with images is in complete accordance with scribal conventions. The other example is the name of the governor of Citlalpopoca from Quiahuiztlan, written with the logograms **SITLA** from *citlalli* 'star' and **POPO** from *popoca* 'smoke'. In the *Texas Fragment* we find three anthroponyms. These represent the names of three of the four lords, or rulers of Tlaxcala, Xicontencatl from Tizatlan (written with the glyph **XIKO** from *xicotli*

[19] Tacuiloa is the Nahuatl variant from Central American.

'bumblebee'), Maxixcatzin (with the glyph **A** from *atl* 'water'), and Tlehuexolotzin from Tepeticpac (with the glyph **WEXOLO** from *wexolotl* 'turkey') (see Figure 5.19).[20]

In regards to Quauhquechollan, the toponyms are recorded in other sixteenth-century documents from the same town, notably the *Genealogía de Quauhquechollan-Macuilxochitepec,* the *Codex Huaquechula*, and the *Mapa Circular de Quauhquechollan* (Asselbergs 2018). However, the LQUA has an example of an anthroponym located on the map between the regions identified by Asselbergs as Petapa and Almolonga. Here we find a Spaniard seated in an X-chair in front of a building with a thatched roof while holding a sword in his left hand and a red banner swaying in the air in his right hand. Placed upon his head, following Mesoamerican conventions for representing personal names, the Spaniard's name is given with two signs, **XOCH** from *xochitl* 'flower' and **a** from *atl* 'water' (Figure 5.20). This combination of signs also appears in the *Codex Vergara* and in the *Codex Oztoticpac*, both from the region of Texcoco, Mexico. In the *Codex Vergara* the name is annotated as *<martín xochihua>*.[21] Although I do not think the examples from LQUA and *Codex Vergara* represent the same person, and possibly the signs in the LQUA may not render the name Xochihua, it is interesting to find the name of a Spanish person represented in hieroglyphic writing. This is not too unique, however, since in other documents, *tlacuilos* wrote Spanish names (Pedro, Bartolomé, Francisco, and others) with Nahuatl hieroglyphs. Joaquín Galarza notes that the sign for flower is used to refer to the name San José because it represents the sound /xo/ (see Galarza 1988). However, in the example from the LQUA we find not only the sign 'flower' but also the sign 'water'. They probably refer to a Spanish name that has the sounds /xoch/ and /a/, or to one of the towns that currently bear the name of a saint, like San José Pinula or San José Villa Nueva, which are located in the vicinities of Petapa (case 22). Another possibility is that this person was given a Nahuatl-name by the Quauhquecholtec, as in the case of Pedro de Alvarado who became known as Tonatiuh.[22] Besides this example, we have one more case that appears to be a personal name since it is found on the back of a Quauhquecholtec warrior. This possible name consists of two signs, **TEPOTZO** from *tepoxtli* 'hunchback', and possibly **AWEWE** from *ahuehuetl* the 'Montezuma cypress' (Figure 5.21).

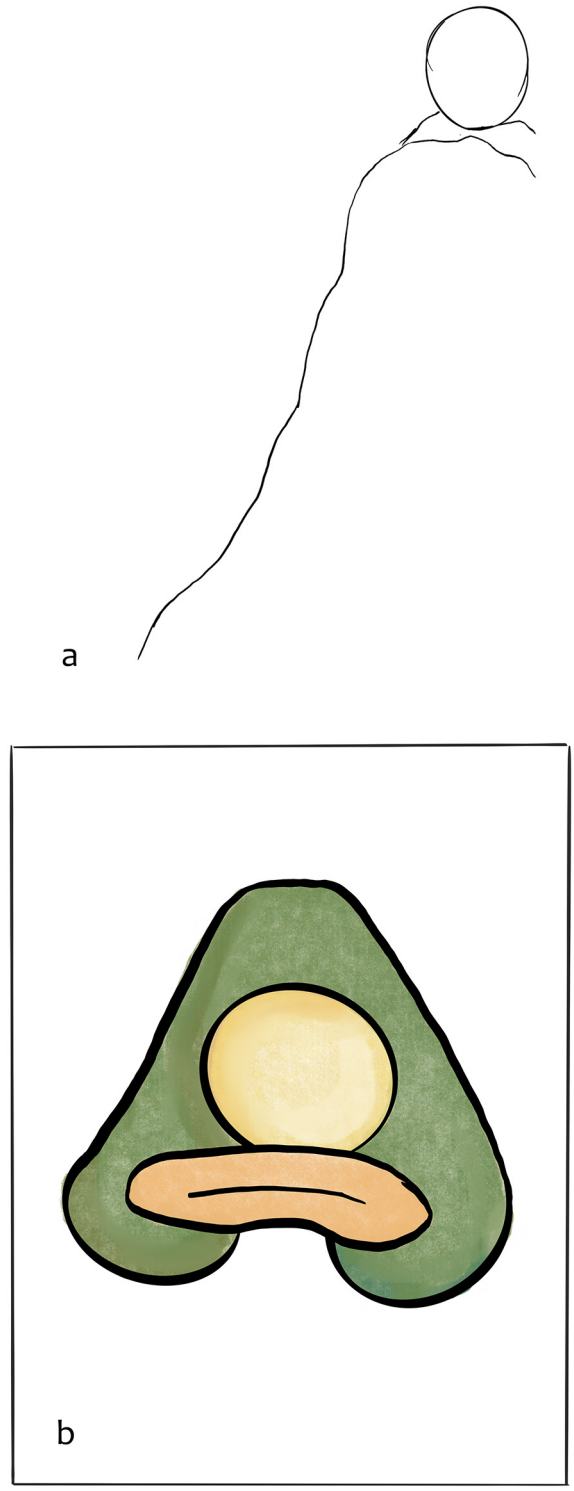


Figure 5.18: *Lienzo de Tlaxcala* and *Lienzo de Quauhquechollan*. **a)** Comalapa, **KOMAL**$^{-HILL}$. **b) KOMAL**$^{+HILL}$, case 10.

[20] See Brotherston and Gallegos (1990) as well as Sandoval Villegas and Velásquez García (2021).
[21] Xochihua is translated by Albert Davletshin (2021: Fig. 18) as 'One who has flowers' ~ "homosexual" (as either a personal name or personal identifier).
[22] Where *tonatiuh* is 'sun' in Nahuatl.

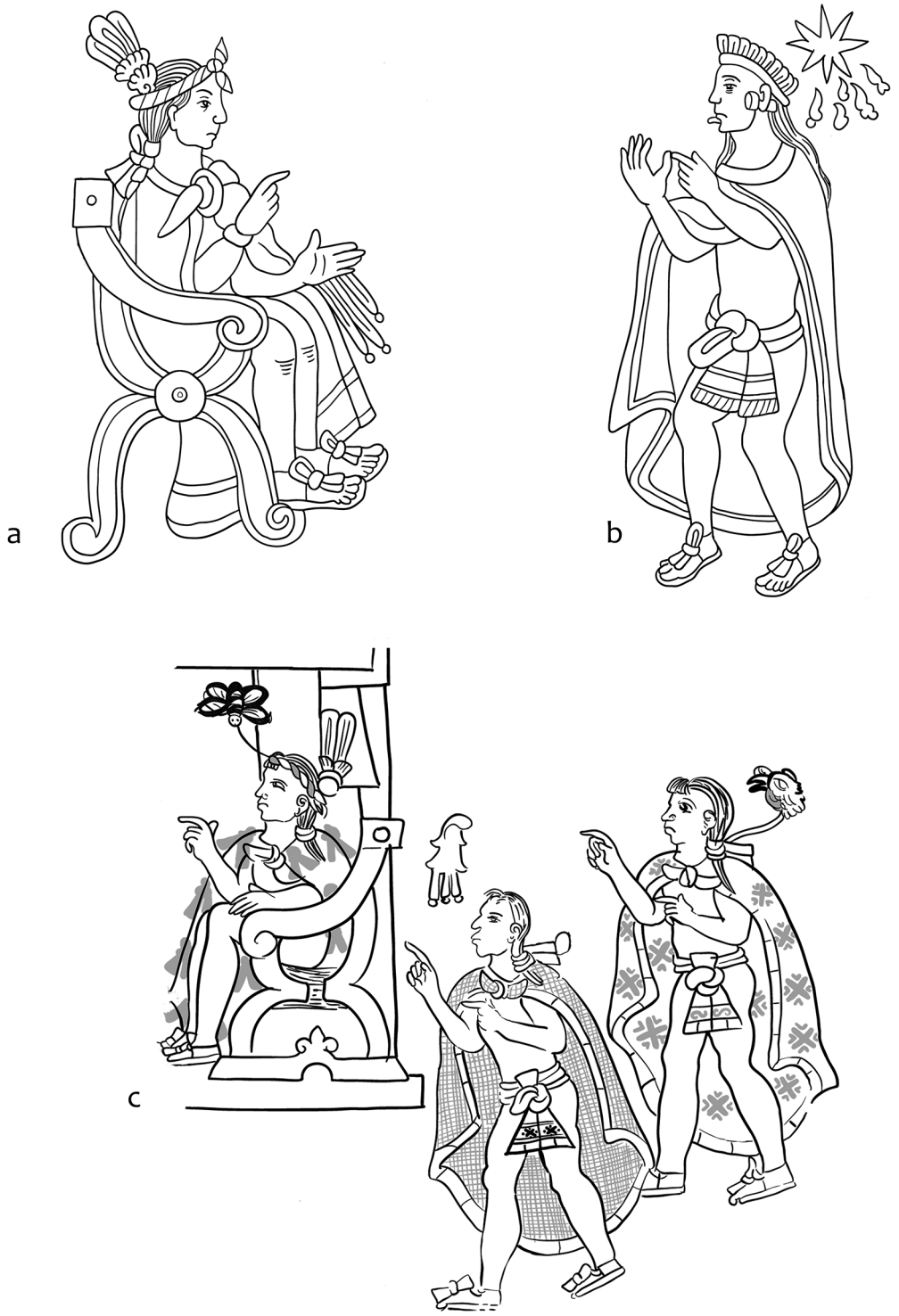


Figure 5.19: *Lienzo de Tlaxcala*.
a) Maxixcatzin. **b)** Citlalpopoca. *Fragmento de Texas*. **c)** Three lords of Tlaxcala: Xicotencatl, Maxixcatzin and Tlehuexolotzin (drawings by Camilo Moncada for the Project "Reconstrucción histórica digital del *Lienzo de Tlaxcala*"; see www.lienzodetlaxcala.unam.mx).

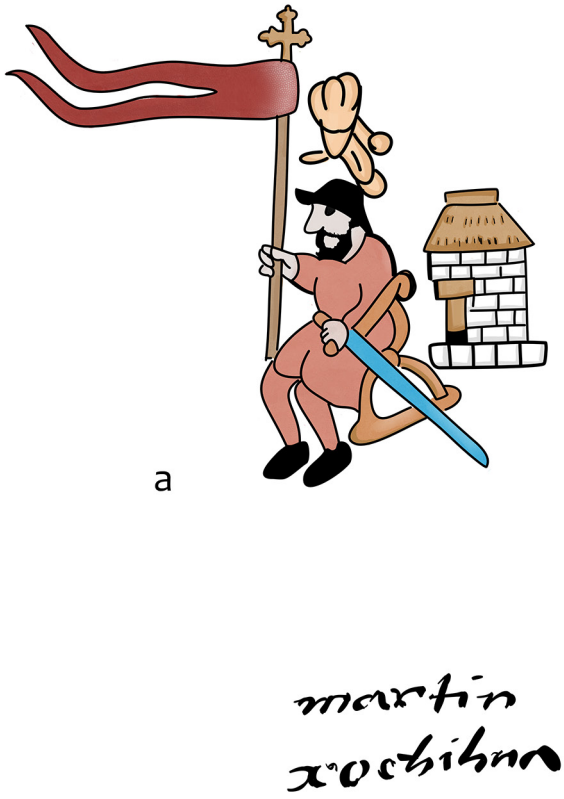


Figure 5.21: *Lienzo de Quauhquechollan.* Name of a Quauhquecholtec soldier.

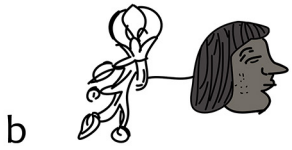


Figure 5.20: Spelling of names with the glyphs **XOCH-a**. **a)** Spanish person with the glyphic compound in the *Lienzo de Quauhquechollan*. **b)** Indigenous person with the name <martin xochihua> in the *Codex Vergara*.

Discussion

In both Quauhquechollan and Tlaxcala, scribes continued using hieroglyphic writing until about the eighteenth century. Gradually, however, alphabetic writing took over as an adaptation to the new reality. In the case of Tlaxcala, we have various genealogical documents that contain hieroglyphic writing. In these genealogies, anthroponyms dominate rather than toponyms. By the nineteenth century, all that we have are copies of earlier manuscripts. From Quauhquechollan, the surviving manuscripts, such as the *Mapa Circular* and others, are from the same period as the *Lienzo de Quauhquechollan*.

The comparison of these two documents helps to establish the names of the places in the LQUA, which, in contrast to the LTLA, does not include alphabetic annotations. Another benefit of making these comparisons is that we can confirm that both documents apply the same repertoire of signs as the Nahua scribal schools of Texcoco, Tenochtitlan, and Tlatelolco.

This chapter has proposed that the 'hill' sign is not only a logogram, but also functions as a semantic determinative. This will be of help in future readings of Nahuatl texts as well as readings of texts in other languages. The chapter has also demonstrated that infixation is used primarily in the LQUA.

Both documents show the route taken by the conquistadors between 1524 and 1527 in the Guatemalan territory. However, in some cases there is a clear distinction regarding which communities were conquered by the Tlaxcaltec and which ones by the Quauhquecholtec (Figure 5.22). Importantly, no other cultural group is credited in these documents with the task of conquering new territories. That is to say, the Tlaxcaltec recorded their own conquest only, and the Quauhquecholtec did likewise. The Tlaxcaltec focused on eastern Guatemala and according to Muñoz Camargo's version (2000 [1585]), they went on to conquer territories in El Salvador and Nicaragua. The Quauhquecholtec focused their efforts on the Guatemalan highland. Unfortunately, we do not have

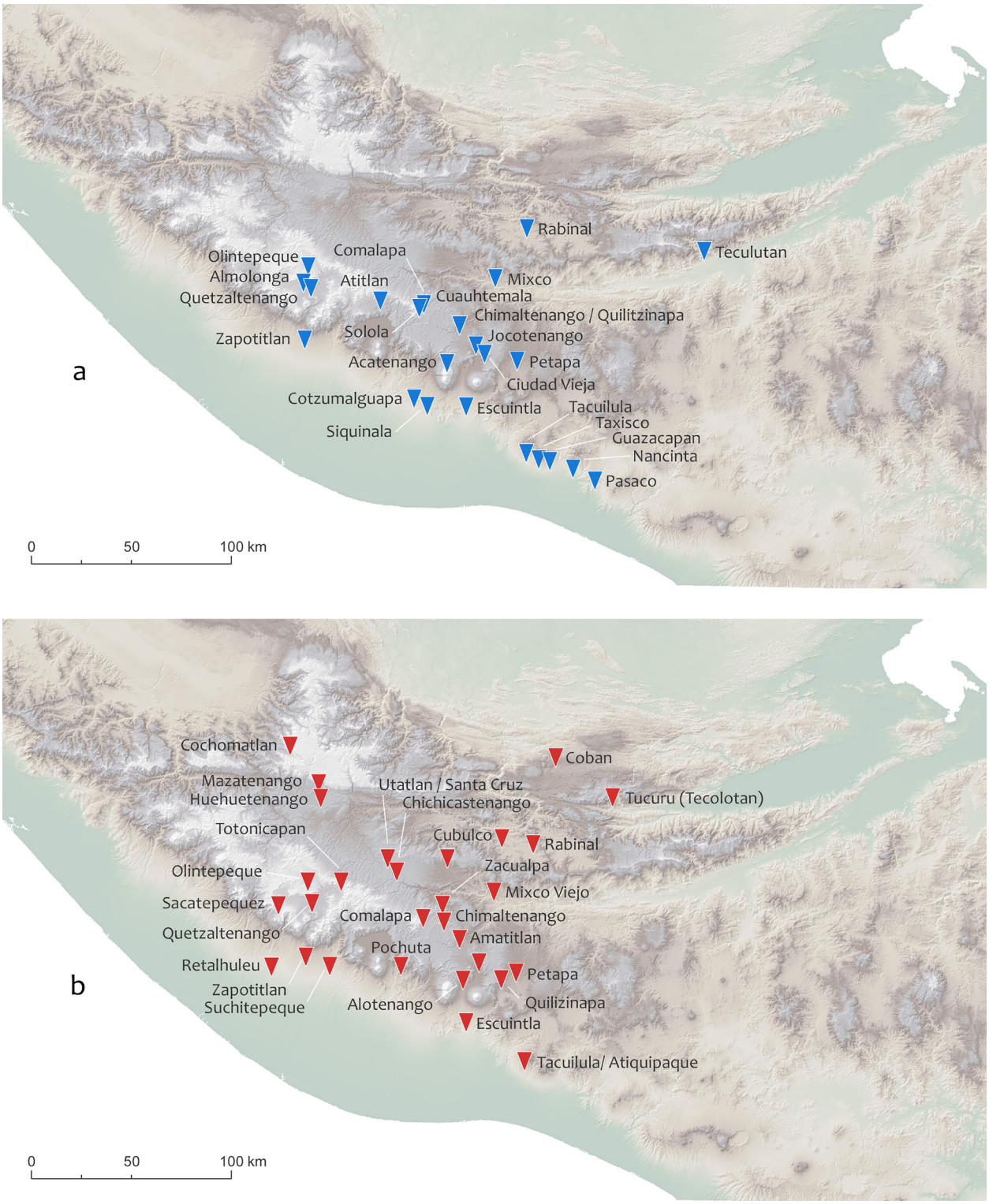


Figure 5.22: Spatial distribution of conquered towns.
According to **a)** the *Lienzo de Tlaxcala*, the Diego Muñoz Camargo-version and **b)** according to the *Lienzo de Quauhquechollan* (maps by Christophe Helmke).

the part of the document that concerns the conquest they undertook in El Salvador.

The part of the *Lienzo de Tlaxcala* that regards Guatemalan territory is solely concerned with conquests, whereas the *Lienzo de Quauhquechollan* describes both conquests, geography, and important events such as alliances, dances, markets, traps and sojourns. The LQUA is thus different in its emphasis on the settlements of allied Mexicans in these new territories. The purpose is surely to demonstrate the success of the enterprise of conquest. This renders the *Lienzo de Quauhquechollan* a strategic map. We know that the most important camps and settlements of the Indigenous-Spanish conquistadors were Olintepeque, Almolonga, and Iximche. On the map, these places are represented with dances and women taking care of the settlers. Another difference is that in the *Lienzo de Tlaxcala*, the battles that forged the alliance between the Tlaxcaltec and the Spaniards are consistently represented. In contrast, the *Lienzo de Quauhquechollan* rather portrays the battles that ensured the independence of the Quauhquecholtec, omitting any representations of Spaniards. An example is the scene in Comalapa, where we see the Quauhquecholtec fighting the Kaqchikel.

A final trait that is only found in the LQUA is a precise rendering of the geographic route of conquest. Only at one time is this geographic precision forsaken, namely when Olintepeque is represented at three different places on the map that relate three different moments in history. This trait confirms that the *lienzo* is not just a map but also a record of chronological history.

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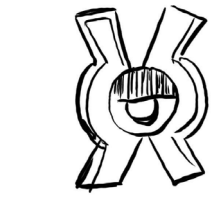
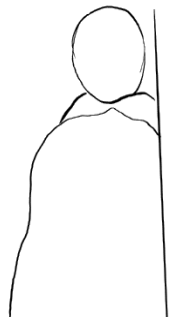
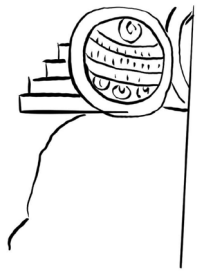
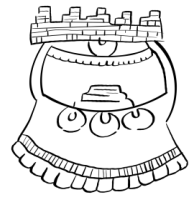
Table 5.1: Analysis of the Nahuatl hieroglyphs (toponyms).

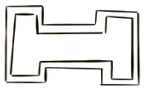
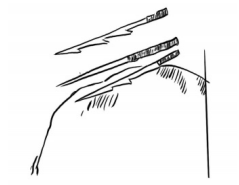
TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
Retalhuleu, Retalhuleu	—	(13)	LQUA: ?[1]
San Francisco Zapotitlan, Retalhuleu	MUCA 103 <Çapotitlan>	(14)	LTLA: **TZAPO**-HILL LQUA: **TZAPO**+HILL
San Antonio Suchitepequez, Suchitepequez	—	(15)	LQUA: **XOCH**-HILL
Quetzaltenango, Quetzaltenango	MUCA (104) <quetzaltenanco>	(16)	LTLA: **KETZAL-TENAN**$_3$-HILL **LQUA: KETZAL-TENAN**$_1$+HILL

[1] Asselbergs (2002) reads this sign as the rivers Sununa and Samala, but this interpretation is based on geography. I do not believe it is composed of signs from writing. My suggestion is that the two rivers are part of the geography and the arrow could symbolize conquest, or allude to the moment wherein the tree was split in two.

TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
San Martín Sacatepequez, Quetzaltenango	—	(17)	**LQUA: SAKA**+HILL **AKA**+HILL
San Juan Olintepeque, Quetzaltenango	MUCA (124) <tlalolintepec> 	(18)	LTLA: **OLIN-**HILL LQUA: **OLIN+**HILL (appears three times)
San Miguel Totonicapan, Totonicapan	—	(19)	LQUA: **TOTONIK+APAN**
Chichicastenango, Quiche	—	(20)	LQUA: **CHICHIKAS-TENAN**$_2$+HILL

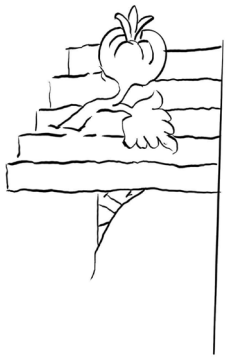
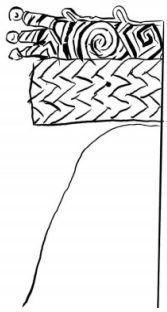
TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
Santa Cruz del Quiche/ Utatlan	—	(21)	LQUA: **?**[2]
San Juan Comalapa, Chimaltenango	MUCA (123) <comahllan> 	(22)	LTLA: **KOMAL**-HILL LQUA: **KOMAL**+HILL
Santa Ana Chimaltenango, Chimaltenango	MUCA (125) <chimaltenaco> 	(23) 	LTLA: **CHIMAL**-**TENAN**$_1$-HILL LQUA: **CHIMAL**- **TENAN**$_1$
Solola, Solola	MUCA (105) <tecpan atitlan>	—	LTLA: **TEK**^{W}-**ATI**?/**A**-HILL

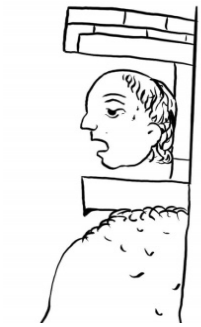
[2] It is not read, as these do not constitute writing.

TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
Iximche/Tecpan, Chimaltenango	MUCA (106) <cuauhtemallan> 	(24) 	LTLA: **K^{W}AW$_{2}$-MAL**-HILL LQUA: **TEK^{W}-TEOPAN-CHIMAL**? **TEK^{W}-TETEL-CHIMAL?** **MAL-TETEL-CHIMAL**? **MAL-TEOPAN-CHIMA**L?
San Miguel Escobar / Zacualpa, Sacatepequez	—	(25) 	LQUA: **TLACH**[3]
Atiquipaque, Santa Rosa	MUCA (108) <aticpac> 	—	LTLA: **ATI**?-HILL
Taxisco, Santa Rosa	MUCA (109) <tlaxichco> 	—	LTLA: **TLAKO**-HILL

[3] It is a toponym or a geographical detail.

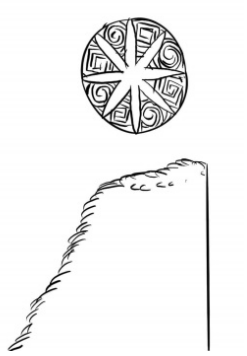
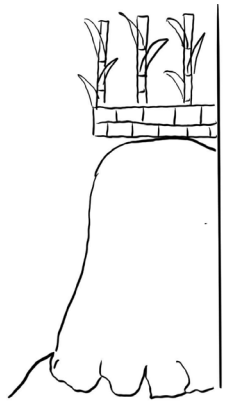
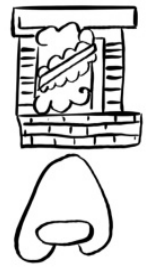
TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
Guazacapan, Santa Rosa	MUCA (110) <xonacapan> 	—	LTLA: **XONAKA**-HILL
Nancintla, Santa Rosa	MUCA (111) <nantzintla> 	—	LTLA: **NAN**-HILL
Pasaco, Santa Rosa	MUCA (112) <pazan> 	—	LTLA: **PACH**-HILL
?	MUCA (127) <Tlamacazcatepec> 	—	LTLA: **TLAMAKAS**-HILL

TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
Jocotenango, Sacatepequez	MUCA (128) <Xocotenanco> 	—	LTLA: **XOKO-TENAN**$_1$-HILL
San Miguel Petapa, Guatemala	MUCA (129) <Petlaapan> 	(26) 	LTLA: **PETLA-APAN** -HILL LQUA: **PETLA+APAN**
Amatitlan, Guatemala	MUCA (130) <tzontecoapan> 	(27) 	LTLA: **TZONTEKO+APAN-**HILL LQUA: **TZONTEKO/ TZON/TZO**
Tacuilula, Escuintla	MUCA (131) <tlacuilulan> 	—	LTLA: **TLAK^{W}I**-HILL

TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
Siquinala, Escuintla	MUCA (132) <tziquinala> 	—	LTLA: **?**[4]
26. Ichanhuehue*, Escuintla	MUCA (133) <huehueychan> 	—	LTLA: **CHAN**-**WEWE**-[HILL5]
Cotzumalguapa, Escuintla	MUCA (134) <cozamaloapan> 	—	LTLA: **KOSOMAL**-**APAN**- HILL

[4] This is the only Maya word, "Siquinala" from Tzikin and /ala/.

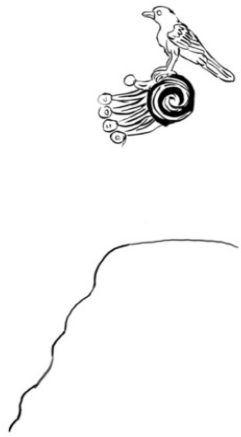
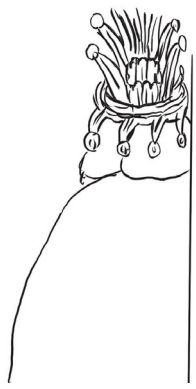
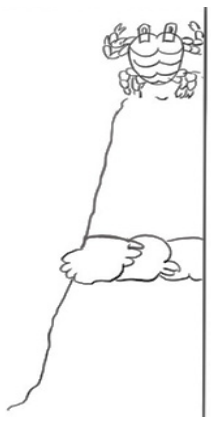
[5] Muñoz Camargo annotates it as <Huehueychan> and places it after the conquest of Siquinala and before the conquest of Cotzumalguapa. This annotation could be mistaken since another town, Ichanhuehue, is located four leagues from Siquinala and less than one league from Cotzumalguapa, possibly modern day El Baúl (Orellana 1995: 135).

TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
?	MUCA (135) <Citlalapan> 	—	LTLA: **SITLAL**+**APAN**-HILL
Acatenango, Chimaltenango	MUCA (136) <Acatenanco> 	—	LTLA: **AKA**-**TENAN**$_2$-HILL
Mixco Viejo, Chimaltenango	—	(28) 	LQUA: **(te)**+**TEKPAN/te-KAL?**-HILL6

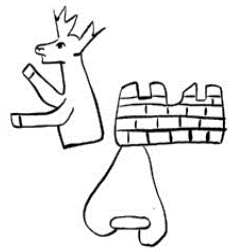
[6] Another example of infixation.

TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
Pochuta, Chimaltenango	—	(29)	LQUA: **?**[7]
Escuintla, Escuintla	MUCA (107) <ytscuintepec>	(30)	LTLA: **ITZK^{W}IN**-HILL LQUA: ?+**APA**? **A**?-**TLAKA**?
San Juan Alotenango, Sacatepequez	—	(31)	LQUA: **ALO**+HILL

[7] Cannot be read, but part of the landscape.

TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
Antigua, Sacatepequez (Quilizinapa)	MUCA (145) <quillitzinapan> 	(32) 	LTLA: **KILI**-**APAN**-HILL LQUA: **KILI**+**APAN**
Ciudad Vieja, Sacatepequez	MUCA (144) <Atlmoloyan> 	(33) 	LTLA: **A**-**MOLOYA**-HILL LQUA: **?**[8]
Rabinal, Baja Verapaz	MUCA (126) <Tequicitlan> 	(34) 	LTLA: **TEK^{W}ISI**-HILL LQUA: **TEK^{W}ISI**-HILL

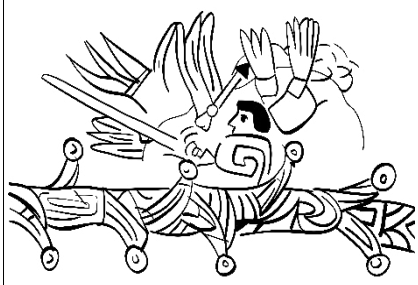
[8] I do not believe it should be treated as writing.

TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
Panacal, Baja Verapaz	—	(35)	LQUA: **AMEYAL**-HILL
San Lorenzo Mazatenango, Huehuetenango	—	(36) 	LQUA: **MASA**-**TENAN**$_1$-HILL
Coban, Alta Verapaz	—	(37)	LQUA: **KIAW**-HILL
Cubulco, Baja Verapaz	—	(38)	LQUA: **ko**-HILL

TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
San Miguel Tucuru, Alta Verapaz	MUCA (149) <tecollotlan> 	(39) 	LTLA: **TEKOLO**-HILL LQUA: **TEKOLO**
Todos Santos Cuchumatanes, Huehuetenango	—	(40) 	LQUA: **KOCHO**
Huehuetenango	—	(41) 	**TENAN**
?	MUCA (137) <tecpan pantitlan> 	—	LTLA: **TEK**^{W}-**PAN**-HILL

TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
?	MUCA (138) <tecpan Apan> 	—	LTLA: **TEK^{W}-APAN**-HILL
Mixco, Guatemala	MUCA (146) <mixtepec> 	—	LTLA: **MIX**-HILL
?	—		LQUA: **?**[9]
? Verapaz	—	(sn) 	LQUA: **TEKSIS**-HILL

[9] Cannot be read. It refers to the tree Macpalxochitl (Asselbergs 2018: 258).

TOWN (MODERN NAME)	LIENZO DE TLAXCALA (numeration following Muñoz Camargo; annotations are in <...>).	LIENZO DE QUAUHQUECHOLLAN (numeration follows that established by the Universidad Francisco Marroquin)	READINGS OF THE GLYPHS
Atenco?	—		LQUA: **A-TEN**

Chapter 6:
Precolumbian Precursors to the Central Mexican Colonial Calendar Wheels[1]

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The approximately twenty-five 'calendar wheels' found in colonial manuscripts from different parts of Mexico represent an intriguing group of graphic devices (for an overview see Glass 1975: 30-31). Their main property is a circular organisation of Precolumbian calendrical cycles, mainly the 260-day cycle, the 52-year cycle and the cycle of eighteen 20-day *veintena*-periods. The wheels from the Maya area also typically include the cycle of thirteen k'atun periods, each of roughly two decades.[2] Another characteristic of the wheels is the integration of elements from European calendrics and cosmology, such as the names of Julian years or months, or iconographic elements as for example the four cardinal winds from medieval cosmograms.[3] The wheels, then, like much other art from the colonial epoch, reflect the exchange of concepts and forms between the Mesoamerican and Spanish cultures.

Despite the evident double heritage of most of the colonial calendar wheels, it is not always clear which elements derive from which tradition nor what their juxtaposition signified for the scribes. In fact, the most characteristic trait of these calendar wheels, their circular form, has generated conflicting hypotheses. Some scholars hold that the calendar wheels owe their circular shape to the incoming European tradition of portraying time in a circular manner (e.g. Aveni 2012; Díaz 2012, 2020: 279-302; Oudijk and Castañeda de la Paz 2010: 116-121; Spitler 2005a: 128, 2005b). Anthony Aveni, for example, purports that "calendar wheels are an innovation of the colonial period" (Aveni 2012: 87), and Susan Spitler contends that "this type of diagram [the calendar wheel] is purely Colonial" (Spitler 2005a: 128). In contrast, other scholars contradict these views by arguing that obvious models for the calendar wheels and their circular shape can be found among the Precolumbian sources, for example the Aztec calendar stone which has a circular ring of day signs integrated into its iconographic design (e.g. Brotherston 2005: 69-77; Glass 1975: 30; Jesper Nielsen, pers. comm. 2020; Stuart 2021: 58n10; Taube 1988).[4] David Stuart, for instance, is critical of the conclusions reached by Aveni and Spitler and notes: "I believe there is compelling evidence that both squared and circular representations of time existed in ancient Mesoamerica, used in different settings, and that many colonial-era diagrams drew upon comparable indigenous and European templates" (Stuart 2021: 58, n. 10).

Aveni and Spitler both reject the idea that the Aztec calendar stone support any notion of continuity between the Precolumbian tradition and the colonial calendar wheels. They view the Aztec monument as too different in terms of function. Spitler argues that the Aztec calendar stone served an entirely different purpose than the colonial calendar wheels: "The day signs of the *tonalpohualli* appear in this image [the Aztec calendar stone] because of the mythical ties between time and creation, not so that they may be counted off to mark the passage of time, as is done using a calendar" (Spitler 2005a: 128). Likewise, Aveni argues that the Aztec calendar stone "is not a calendar in any functional sense" (Aveni 2012: 68). Similar arguments have been voiced by Ana Díaz (2020: 299) as well as Michel Oudijk and Maria Castañeda de la Paz (2010: 116-120).

[1] This contribution is based on research undertaken as part of my Ph.D. thesis (Clemmensen 2022).

[2] For an explanation and comparison of these cycles, see Broda de Casas (1969).

[3] Medieval world maps, or cosmograms, sometimes known as T-O-maps, represent a circular earth parted in three continents. The winds are typically represented by blowing faces at the corners of these maps.

[4] This argument has until now not been explored in depth, but only noted in the form of a remark or footnote. The works of Brotherston and Taube should be considered exceptions. Nevertheless, Brotherston's (2005: 69-77) analysis has failed to convince scholars such as Aveni and Spitler none of whom takes notice of Brotherston's argument, perhaps because of his rather complex line of argumentation. Taube's 1988 article, in contrast, has influenced the later interpretations of colonial calendar wheels but only those of the Maya area. Taube (1988) discusses a stone turtle from Postclassic Mayapan, Yucatan, with thirteen k'atun signs incised along the edge of its semi-circular carapace. Later scholars have accepted this monument as a precursor for the colonial k'atun calendar wheels (e.g. Bernal Romero and Velásquez García 2010; Miram and Bricker 1996; Solari 2010). However, Taube's (1988: 201n10) remark that the Aztec calendar stone was also an example of a Precolumbian 'calendar wheel' was not explored further in his article.

In this contribution, I revisit the discussion about whether or not it is reasonable to argue for a continuity between the Precolumbian examples of circular calendars and the colonial calendar wheels. I first review the arguments for proposing European models for the colonial wheels. Thereafter I turn to the Precolumbian circular calendars of which at least three exist. I analyse their visual appearance and the possible functions of the circular calendar sequences. Finally, these examples will be compared to the Boban calendar wheel, an early colonial document from Texcoco with a circular calendar, in order to evaluate possible functional and visual overlaps.

European calendar wheels in the Old and the New World

To adequately assert the nature of the colonial calendar wheels, their influence from both the Mesoamerican and European cultural spheres needs to be taken into account. I will therefore briefly introduce the medieval tradition of calendar wheels with a focus on those wheels that scholars such as Aveni and Spitler have proposed as possible forerunners for the colonial calendar wheels.

As Aveni explains in his book *Circling the Square: How the Conquest Altered the Shape of Time* (2012) the circle was deeply embedded into European representations and conceptions of time. Since Antiquity and throughout the Middle Ages, the circle was the preferred shape of time associated with the circular cosmos and the circular movement of the celestial bodies (Aveni 2012: 11-16). In the Middle Ages, circular diagrams were widespread in manuscripts and books as devices that could convey the activities of the seasons, the zodiac signs, or other themes such as the ages of humankind (Aveni 2012: 87). Aveni concludes that "the degree of embeddedness of the convention of the circle as a way of organizing and conveying knowledge of the world at the time of Hispanic contact cannot be overstated" (Aveni 2012: 87). Following Aveni's observations, we can therefore expect that the European circular representations of time would have been distributed throughout Mesoamerica as a consequence of conquest and Christian proselytising.

Both Spitler (2005a: 128) and Aveni (2012: 50) draw attention to the so-called zodiac-wheel as a European model that would have inspired colonial artists to represent the Aztec time cycles as calendar wheels. The zodiacs are ancient Babylonian symbols representing twelve stellar constellations located on the ecliptic, a band on the night sky that corresponds to the apparent path of the sun. Coupled with the Greek spherical model of the universe, the twelve zodiac signs are easily imagined as a ring that encircles the earth and represents the path of the sun. The Romans used the zodiac ring as a symbol of the cosmos and depicted it in imperial artworks, with important deities at the centre, such as for example *sol invictus*, 'the unconquered sun', the main deity of Late Antique Rome (Cohen 2014: 54; Jones 2017: 38). Late Antique synagogue mosaics from the 4th to the 6th century attest how early Jewish artists had appropriated the zodiac wheel from the Greco-Roman world to depict God as a pantocrator (Arad 2004: 65-66).

The earliest examples of Christian uses of the zodiac wheel-format date to the 9th century, from which period several manuscripts containing zodiac wheels have survived (Arad 2004: 67-72; Obrist 2001). Later, the zodiac wheels became far more wide-spread, also outside the manuscript-tradition, as can be seen, for instance, in the famous tapestry of Girona (*c.* AD 1100), but also in the so-called rose window on display for public view in the cathedral of Lausanne, Switzerland (*c.* AD 1190) (see Arad 2004: 59-63; Cohen 2014: 53, 66; Carson Pastan and Kurmann-Schwarz 2022). In this beautifully coloured window, the Christian God is placed in the middle of a complex design with representations of not only the zodiacs but also other concepts such as the four rivers of Paradise and various astrological symbols. The astrological meaning of the zodiacs went back to Antiquity but thrived in the Middle Ages, and we can expect that zodiac wheels had a meaning in prognostication as well as in astrological medicine (Page 2002: 54-55; Williams 2021). Finally, in medieval art, the link between the Julian year and the twelve zodiacs became manifest in the association between the zodiacs and the months, even though these are not actually synchronised. The association is sometimes seen in the juxtaposition of the zodiacs with a set of images known as 'the labours of the months' depicting monthly agricultural or festive activities (Henish 1999: 1-27; Webster 1938: 5-36).

The example that both Aveni (2012: 13) and Spitler (2005a: 128) refer to as a possible source of inspiration for the indigenous scribes responsible for colonial calendar wheels such as the Boban wheel, is an image taken from a 1495-version of Bartholomaeus Anglicus' encyclopaedia *De proprietatibus rerum* (*c.* 1240) (Figure 6.1). The wheel shows the twelve zodiacs in the outer band and the twelve labours of the months in the inner band. The centre depicts the two halves of the year. Like other zodiac wheels, the example from *De proprietatibus rerum* is a highly symbolic image. It illustrates the passing of the year and the influence it had on people's lives. If it did inspire Mesoamerican scribes to produce calendar wheels, it partly contradicts the statement of Aveni and Spitler that the colonial calendar wheels are 'true calendars' used to 'count off to mark the passage of time', to reiterate Spitler's phrasing. At least, the

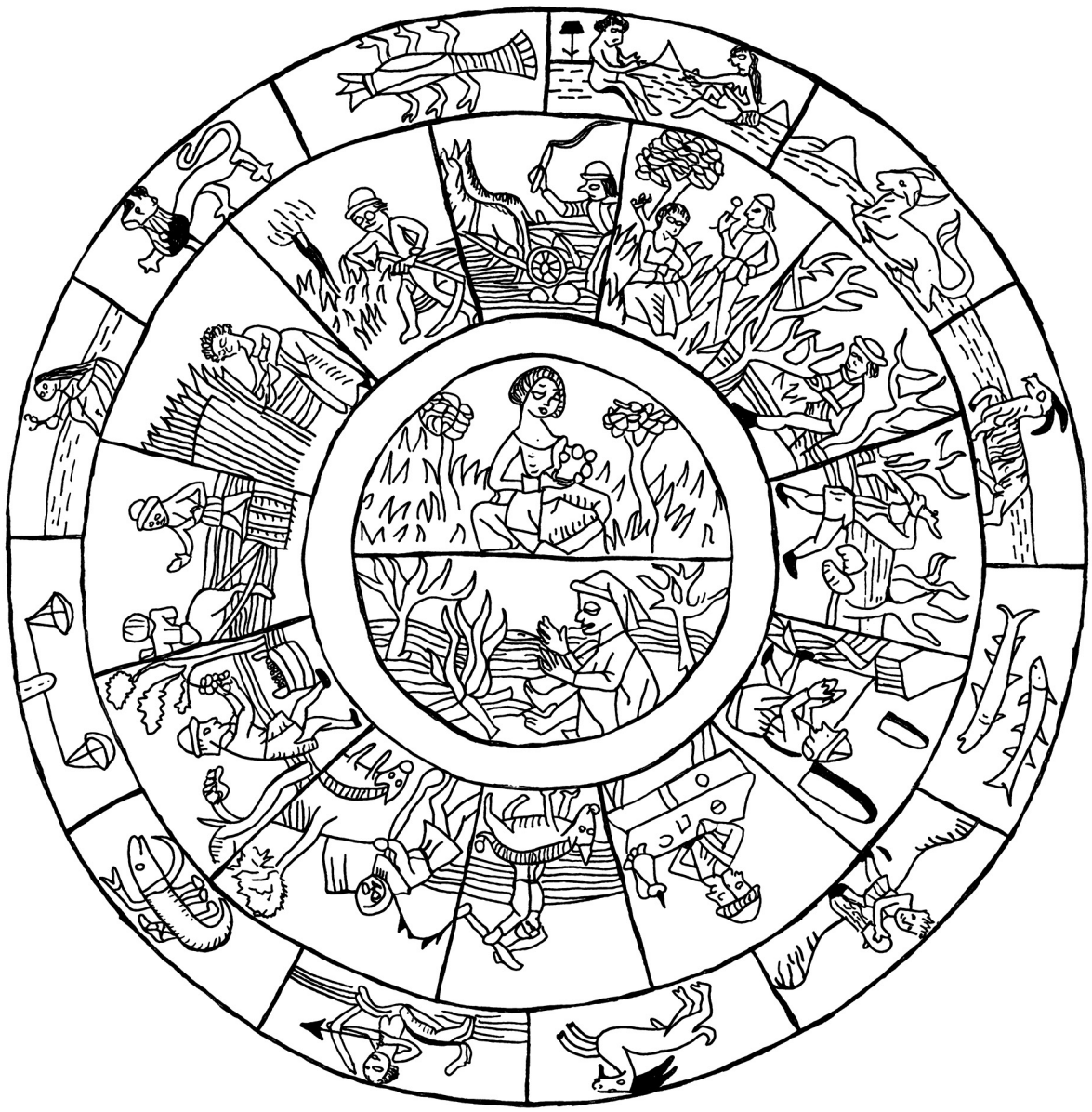

Figure 6.1: The wheel of the year by Bartholomaeus Anglicus.
From a 1495-publication of *De proprietatibus rerum* (*c.* 1240) (drawing by the author, based on Aveni 2012: Fig. 2.1b, 14).

colonial wheels did not gain this trait from the zodiac wheels such as the one reviewed here, since the zodiac signs in these European wheels were mainly there as a symbol of time and cosmos rather than as a functional calendar.

Another type of calendar wheel that Spitler (2005a: 128) refers to as a possible model for the colonial wheels is the 'computistical diagram'. Computus was a mathematical-astronomical tradition used by medieval Christians to calculate the location of Easter within the Julian year (Blackburn and Holford-Strevens 1999: 801-828; McCluskey 1998: 77-96). Spitler's example is a wheel from Pérez de Varga's *Fábrica del universo* (1563) illustrating the correlation between Julian years, specifically from AD 1558 to 1587, and various computus cycles that trace the cycles of the moon (Figure 6.2). Computus wheels such as the one found in Pérez de Varga's work were employed to facilitate the understanding of the complex data of medieval Easter calculations. The circular shape of the diagram not only rendered the cyclic nature of the cycles intelligible, it also underlined the perfection and orderliness of the computus data and thus emphasised the divine nature of the task of calculating the location of Easter (Wallis 2015). Like the zodiac wheels, computus wheels

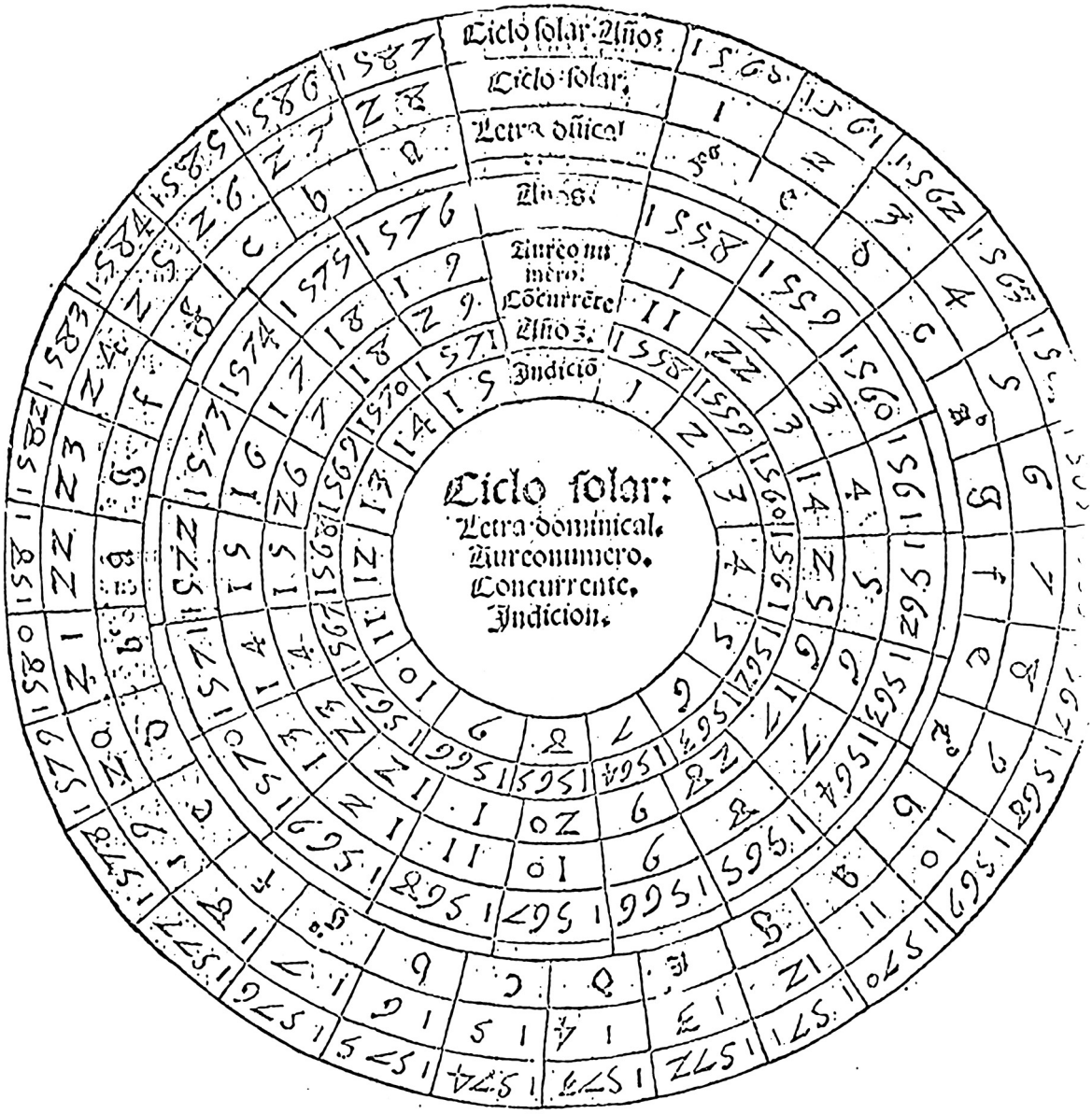

Figure 6.2: Computistical wheel for the years 1558 to 1587.
Adapted from *Fábrica del universo* (1563) fol. CXXV by Pérez de Vargas.

were thus not simple calendars, nor were they only didactic illustrations, but rather complex devices with intertwining religious and scientific purposes.

Both zodiac and computus wheels as well as other types of calendar wheels and circular diagrams were widespread in European printed works by the time of the Spanish invasion of Mesoamerica. Some of these works became popular in Mexico, not least the so-called *reportorios de los tiempos*, almanacs with cosmological, medical, and calendrical contents. The *Cronología y reportorio de la razon de los tiempos* (1594) by Rodrigo Zamorano is an example of an almanac with circular diagrams some of which are calendar wheels. Three of Zamorano's four calendar wheels are computus wheels that visualise different cycles of Christian computus (Zamorano 1594: 147, 152, 157). A fourth wheel is a so-called *ouroboros*, a depiction of a serpent swallowing its own tail, a symbol with ancient roots representing the eternal cycle of destruction and rebirth. Here, the image illustrates the circular motion and continuous rebirth of the year and its twelve months (Zamorano 1594: 100).

In colonial Mexico, both friars and indigenous authors copied extensively from these almanacs (Caso Barrera 2019: 102-103; Spitler 2005a: 86-89). In some cases, it is possible to observe how wheel-diagrams in the

reportorios were used as direct models for calendar wheels. The k'atun wheel in the colonial Maya work known as the *Chilam Balam of Kaua*, a circular diagram with thirteen heads representing the calendrical cycle of thirteen k'atun, is based on a wind-diagram in Zamorano's almanac or cognate of this (Miram and Bricker 1996: 395-398). Zamorano's almanac also contains an image of the medieval geocentric cosmos, a circular diagram with the earth in its center surrounded by spheres of planets and stars. A diagram of exactly this kind was copied by Aztec scribes working for the Franciscan friar Bernardino de Sahagún in Tlatelolco. They transformed it into a calendar wheel depicting the fifty-two year cycle of the Tlatelolcan calendar (Miram and Bricker 1996: 402, n. 2; Spitler 2005a: 179-181).

There is no doubt that medieval calendar wheels and other types of circular diagrams influenced indigenous scribes responsible for the colonial calendar wheels. The question is rather to what extent and in which ways these colonial scribes also applied Mesoamerican visual conventions to the wheels. It is this question that has not been fully explored in previous works, and I therefore now review the Precolumbian evidence for circular calendars.

Time and creation: Precolumbian circular calendars

Although the Aztec calendar stone has been the main example referred to in the previous studies arguing for continuity between Precolumbian and colonial calendar wheels, there are also other sources that exemplify how calendars could be represented circularly prior to the conquest. In fact, at least three circular representations of longer sequences of calendar signs exist among the sources from Late Postclassic Central Mexico. These are found in a divinatory almanac (*Codex Borgia*), as a single-sheet of deer hide (*Mexicain 20*), and inscribed in stone (the Aztec calendar stone). These three have until now not been discussed together, and the circular calendar in *Codex Borgia* has never been discussed as a possible precursor for the colonial wheels. *Mexicain 20* has been briefly touched upon by Aveni (2012: 80-81) as a possible 'exception to the rule' that calendars were never circular in Precolumbian documents, but it has not been sufficiently discussed in this regard either.

It is relevant that these three examples are relatively close both in terms of geographic and temporal proximity to the colonial Boban calendar wheel, as it heightens the plausibility that the colonial scribes were familiar with the iconographic conventions they reflect.[5] Furthermore, the three examples appear in three different media (a divinatory codex, a single-sheet of deer hide, and a stone monument) indicating that the practice of reproducing calendars in a circular manner was not restricted to the codices alone.

Codex Borgia

The *Codex Borgia* is a Late Postclassic manuscript from Central Mexico, possibly with a Puebla-Tlaxcala provenience (Boone 2007: 227-228). A representation of a circular calendar is found in the so-called 'narrative section' of the codex. This section is an enigmatic eighteen-page sequence that has yielded a range of different interpretations. Eduard Seler, for example, saw the section as relating the journey of Venus through the heavens and the underworld, while Karl Nowotny saw the pages as separate depictions of rituals within a ceremonial centre (Boone 2007: 171-173). Elizabeth Hill Boone (2007: 173-175) has proposed that the section represents a cosmogony.

On page 30, the second page in the 'narrative section', a circular enclosure takes up the main part of the page and is surrounded by a full set of the twenty day signs from the 260-day calendar placed at the periphery (Figure 6.3). The sequence is read in a counter-clockwise order. At the intercardinal points, the four day signs 'Death', 'Monkey', 'Vulture', and 'Crocodile' are emphasized in circular cartouches, or frames, while the remaining sixteen signs are without cartouches. Next to each of the four signs, an individual with claws, starry eyes, black body paint, and a copal bag stands in front of a world tree while using a bone awl to pierce the cartouche of the calendar sign.

The circular enclosure inside the frame of calendar signs consists of concentric golden, red, white, and yellow bands as well as an outer border of black panels interspersed with red paper strips with starry eyes. In the centre, two small black beings with incense pouches and the red beaks characteristic of the wind deity Ehecatl-Quetzalcoatl appear out of the mouths of two intertwined 'wind' serpents also with red beaks and upward turning maws.

As a divine, nocturnal environment, the circular enclosure appears to be the abode of divine powers related to wind and recalling the primordial and creative aspects of Ehecatl-Quetzalcoatl. Boone interprets this page as the birth of the day count. She argues that the act of piercing signifies the birth of these signs, similar to other codical scenes where "the gods pierce the eyes of the newborns to symbolize their

[5] The three Precolumbian examples all pertain to a tradition of shared iconographic conventions found in Central Mexico, sometimes called the Mixtec-Puebla style (Nicholson 1960; see also Boone and Smith 2003). Examples of circular calendars also exist in other parts of Mesoamerica, but I will not discuss these here because of their remoteness in time and place. Apart from the already mentioned stone turtle from Mayapan (Taube 1988), there is also circular plate from the Classic period in the Maya area depicting the maize-god surrounded by the twenty day signs divided into four sections (see Boot 2003).

Figure 6.3: *Codex Borgia*, page 30.
After Nowotny 1976. © Akademische Druck- und Verlagsanstalt.

birth and first seeing" (Boone 2007: 183). Since the full sequence of twenty days signs is represented and placed within a cosmogram with four world-corners, the calendar sequence probably does not refer to any specific dates, but to the concept of calendar, or of time more generally.

Two other pages in the 'narrative section' (page 39 and 41) have similar circular enclosures surrounded by calendar signs, although in both cases there are only four out of twenty calendar signs present, which are the ones placed at the intercardinal positions. These two pages appear as variant versions of the circular calendrical composition on page 30, sharing many visual and conceptual traits. In both cases, the central abode appears to be a ritual stage of some kind with actors placed symmetrically opposite one another. The role of the day signs is obscure on these pages, although it may be suggested, as has Boone (2007: 200), that the signs on page 41 represent the days that the Cihuateteo descent to earth, which may also be the specific days that the depicted ritual takes place. The Cihuateteo were believed to be the souls of the women who died in childbirth, and they were venerated by midwifes (Dibble and Anderson 1969: 161-165; Pohl 2021: 285).

Since the interpretation of these pages in the Borgia Codex is disputed, I have no ambitions of making any

Figure 6.4: *Mexicain 20*.
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final conclusions as to the function of the calendar signs in these circular arrangements. Nevertheless, we may suggest that the calendar signs appear both as an abstract reference to time—suggested in page 30 by the cosmographic layout—and as references to specific days, periods, or deities, as suggested by page 41. Visually, the calendar signs function as frames for circular enclosures, which appear to be either abodes of divine beings or ritual stages with music, dance or sacrifice.

Mexicain 20

The second manuscript with a circular calendar to be reviewed here is the *Mexicain 20*, a document consisting of one sheet of deer hide measuring 91cm by 51cm. The document can be dated to the Late Postclassic and has its origins in the Mixtec Alta (Boone 2007: 213-214; Figure 6.4). The manuscript is divided into four quadrants and a fifth central scene. Each of the five scenes are framed by a sequence of fifty-two days represented by fifty-one dots and one day sign.

The 'calendar wheel' is found in the central scene, whose frame, in contrast to the other four square frames, is circular. The five signs which are coupled with each section are '5 Lizard' (upper right), '5 Vulture' (upper left), '5 Rabbit' (centre), '5 Flower' (lower left), and '5 Grass' (lower right). Following the 260-day sequence, the manuscript thus moves counter-clockwise through the sections interrupted by a jump to the centre. In each scene, a male and female are depicted presenting ritual objects to each other. Their calendrical names and the associated iconography suggest their identification as the Cihuateteo and their male consorts, the Macuiltonaleque (Jansen 1998: 127-129). As mentioned, the Cihuateteo were venerated by midwifes, whereas the Macuiltonaleque were invoked by male diviners, healers, and rainmakers (Pohl 2021: 285).

The four scenes at the corners take place at specific locations qualified by place names and iconography representing both mythical places, the cardinal directions, and actual places in the Mixtec landscape (Jansen 1998: 129-139; Pohl 2021: 287-291). In the central scene, which is strongly deteriorated, the couple 5 Rabbit and 1 Monkey look upwards as if interacting with an event taking place in the celestial realm (Pohl 2021: 291-293).

There have been several proposals as to the function of the calendrical frame in this document. Boone (2007: 113-114, 117-120) interprets the manuscript as a directional almanac. This type of almanac associates calendar signs with the cardinal directions through iconographic indications such as cosmic trees, particular temples or supernatural actors. The directional almanacs are used in divination and "are broadly applicable to many areas of indigenous life. They link the days in the ritual count with those forces that adhere to the cardinal directions" (Boone 2007: 113).

Maarten Jansen (1998: 148, 151), in contrast, argues that the objective of the manuscript is not to associate certain day signs with mantic contents, but rather to create a ritually powerful situation by recalling the divine powers inherent in the structure of the world and manifest in the association between the four world directions and the sacred markers of the original territory. In this interpretation, the calendar signs are mainly there as part of the cosmogram.

Jansen (1998: 146) presents the idea that the document was used as a ritual 'mesa', and as a surface for the divinatory casting of maize kernels. Katarzyna Mikulska (2018: 223-224) endorses this suggestion, further proposing that the damage done to the central part could have been due to this kind of ritual use. John Pohl and Jeremy Coltman similarly argue that manuscripts such as the *Mexicain 20* could be used as "portable altars for use in healing and divinatory rituals" (Pohl and Coltman 2021: 35). They also suggest that the sequence of calendar signs in the *Mexicain 20* "must have been used to direct the sorcerer along a specific pathway between the place signs and the spirit entities" (Pohl and Coltman 2021: 36).

To summarise, the calendar in the *Mexicain 20* probably had a mainly symbolic function as a cosmic and temporal frame for a sacred enclosure used for sacrifice and ritual. However, we cannot rule out Boone's proposal that the calendar signs would have served a more calendrical function by associating certain days with the forces inherent in the particular world directions. Possibly, both interpretations are correct.

The Aztec calendar stone

The Aztec calendar stone is the third and final example of a circular Precolumbian calendar (Figure 6.5). This Mexica monument—a carved monolith measuring 3.58m in diameter—was originally on display in the central ritual precinct of Tenochtitlan. The iconography of the monument is centred around the image of the sun with its characteristic concentric bands and pointy sun rays. The quincunx motif in the centre is an elaborate version of the calendar sign '4 Movement', which is the name of the fifth and current sun, or world epoch, in Mexica creation mythology (Elzey 1976). Bordering the sun image, two fire serpents frame the composition, symmetrically on either side, their tails and heads meeting at the top and bottom.

The Aztec calendar stone is a version of the circular sacrificial 'altars' used for various kinds of offerings. Some solar altars were known as *cuauhxicalli*, 'eagle vessel', used to receive heart offerings, whereas others, called *temalacatl*, 'round stone',[6] were used for gladiatorial offerings of sacrificial prisoners (Matos and Solís 2004: 104-105). The Dominican friar Diego Durán has a passage on the dedication of one of these sacrificial stones on the day preceding the day 4 Movement. He describes an elaborate ritual involving blood and fire offerings placed on top of the stone (Durán 1994: 190-191; see also Taube 2000: 319). The mythological basis for sacrificing blood and fire on an image of the sun is of course the Mexica creation myth where human sacrifice and blood offerings in a primordial sacrificial pyre led to the creation of the present era of the fifth sun (Taube 2000: 319). By offering fire, blood and other substances on this stone, Aztec priests fulfilled the ultimate religious purpose of nourishing the sun, thereby upholding the universe and securing the continued well-being of the people (Nicholson 1971: 424).

The calendrical sequence on the Aztec calendar stone is integrated into the image of the sun and appears as a circular band around the central '4 Movement' motif. The wheel consists of the twenty day signs of the 260-day calendar and runs anti-clockwise beginning with 'Crocodile', just to the left of 12 o'clock. There are no coefficients to identify the sequence's placement within the 260-day cycle, which seems to indicate that the sequence refers more generally to the concept of calendrical time rather than to particular days or points in time.

There are several plausible interpretations of the calendar sequence. As Díaz (2020: 299) suggests, the ring of day signs may refer to the sun's capacity to emit the valuable heat-soul-essence known as *tonalli*, represented by the day signs. Another related proposal is that the calendar sequence is represented because the *tonalpohualli*, the Aztec 260-calendar, was, like the sun, an intrinsic part of forces that maintain the functioning of the cosmos. It is the movement of the sun that structures the days of the *tonalpohualli*, whereas the *tonalpohualli* structures and names the eras in the myth of the five suns. This interrelatedness of the sun with this fundamental calendrical cycle is cemented by including the *tonapohualli* in the design.

The ring of calendar signs could also be associated with the individual depicted at the centre of the stone. This individual is seen inside the '4 Movement' sign, as a face with a headdress, hair, ear ornaments, a jade necklace, and flint knife tongue. The identity of the face is disputed, but the sun deity *Tonatiuh* as well as the earth deity *Tlalteuctli* have typically been proposed (Nicholson 1993). However, recently, David Stuart (2018; 2021) has suggested that the face depicts Moteuczoma II, a hypothesis supported by the placement of the name glyph of this ruler immediately above.

[6] Or alternatively 'stone spindle whorl' (see Nielsen 2017).

Figure 6.5: The Aztec calendar stone
(drawing by David Stuart, reproduced with permission).

Whether a deity or a deified historical individual, the calendar sequence may signify this individual's rule over, or intimate connection to calendrical time. This interpretation is not irreconcilable with the other interpretations of the calendar sequence as expressing the sun's capacity to emit *tonalli* or the association between the sun's movement and the passing of time.

Summary

These three Precolumbian calendrical expressions demonstrate that circular representations of calendar sequences were part of the iconographic repertoire of Postclassic Central Mexican scribes. On three different occasions, serving different functions, and using different media, scribes chose the circular shape for portraying the 260-day calendar. Although the various meanings ascribed to the calendar sequences are difficult to reconcile and interpret with certainty, a summary of some basic observations may be attempted.

First, the circular calendars may both serve as symbolic references to the 260-day calendar as a concept, or they may include references to specific days or periods. In the case of the Aztec calendar stone or page 30 of the *Codex Borgia* where the sequence consists simply of the twenty day signs without coefficients, we are dealing with general references to the calendar, whereas in *Mexicain 20* or on page 41 of *Codex Borgia* there are references to specific days or periods in the 260-day

cycle. At this point, the Precolumbian circular calendars are similar to the European zodiac wheels. Some zodiac wheels function as symbols of time and the cosmos more generally, while others are designed to be used in astrological prognostication focused on the meaning of the specific zodiac signs (see Page 2002: 52-55). Any opposition between European zodiac wheels as 'true calendars' and the Mesoamerican circular calendars as 'symbolic', as suggested by scholars such as Aveni and Spitler, does not appear valid.

Second, the Precolumbian calendar sequences all encircle some kind of sacred space in which ritual activities take place and/or where important individuals reside. In *Mexicain 20* a divine couple is depicted in the midst of ritual action whereas on page 30 of the *Codex Borgia* supernatural wind-beings reside inside the circular abode. On the Aztec calendar stone, a deity or a deified individual is represented in the act of beckoning blood offerings with his flint knife tongue. We may also recall that this monument was likely a sacrificial stone, and in this case, the circular calendar would have framed the placing of offerings.

Finally, the theme of foundation or creation reappears in at least two of the three examples. On page 30 of the *Codex Borgia* the whole composition depicts, according to Boone, the birth of the 260-day cycle, and is thus an account of the origin of time and the calendar. Likewise, the circular calendar sequence on the Aztec calendar stone frames a glyphic account of the five epochs of Mexica cosmogony, and thus also relates the origin of the cosmos.[7]

We may note that the convention of placing a cosmogonic account within a sequence of calendar signs is also found in other non-circular calendrical 'frames'. One example dated to the early colonial era is the famous cosmogram on the second page of the *Codex Mendoza*. This page portrays the foundation of Tenochtitlan, the Aztec capital, framed within a sequence of fifty-one years represented by year-glyphs in blue cartouches. The sequence in Codex Mendoza, however, is a sequence of named years with coefficients, whereas the circular examples reviewed above contain named days without coefficients. Nevertheless, it could appear that the Precolumbian circular calendars reflect but one specific circular variant of a broader tradition of using calendar sequences to frame foundational scenes.[8]

[7] I am grateful to Jesper Nielsen (personal communication 2020) for this observation.

[8] The concept of calendrical frames and their meaning is explored further in my Ph.D. thesis (Clemmensen 2022).

The Boban Calendar Wheel

Having now reviewed both European and Mesoamerican examples of circular calendars, we may turn to the colonial calendar wheels in order to assert how they relate to the two traditions. I have chosen a single example for this purpose, the Boban calendar wheel, a circular document measuring 38cm in diameter and made from *amate*-paper (Figure 6.6). It was part of the collection of the French archaeologist Eugène Boban, who explains that the document was collected in Texcoco and sent to France in 1867 (Boban 1891: 100). Today it resides in the John Carter Brown library, but since this original is now in an advanced state of deterioration, I reproduce here a lithograph produced at a time when the document was in a better condition. This lithograph is found in Echeverría y Veytia's *Los Calendarios Mexicanos* (1907). The original document still holds significant value, however, since certain details were lost in the lithographic reproduction.[9]

The contents of the document, which centres on the Texcocan dynasty, confirms that it was made in Texcoco. Patricia Lopes Don (2010: 186-188, 193) has suggested that the Boban wheel was used as evidence in legal proceedings taking place in the first half of the 1540s (for dating of the wheel, see also Benton 2017: 51-53). The lawsuit involved the indigenous leader Don Antonio Pimentel Tlahuitoltzin who had mitigated the government of New Spain in order to retrieve land that he believed the state had unjustly appropriated. In the 16th century it was common practice to include indigenous manuscripts as evidence in trials over land (Medrano 2010: 31-46).

The manuscript consists of two sections: a circular ring with calendrical data and a central part with historical information. In the central part of the wheel, three important scenes arranged vertically constitute a brief account of the Texcocan dynasty. From bottom to top, the scenes represent the Chichimec past, the formation of the Triple Alliance, and the colonial rule of Texcoco. The lower, Chichimec-scene depicts a couple wearing animal skins seated around a fire in a cave opening. The man holds a bow and arrow and the woman is engaged in an activity, perhaps preparing a meal. Above the scene, a Nahuatl text can be translates as: "And in ancient times the Chichimecs came to arrive at caves, mountains where nothing was good. They roasted only birds or deer, serpents" (Dibble 1990: 179). The middle scene depicts two indigenous rulers seated on woven reed thrones facing each other (see Davletshin, this

[9] For example, a detail which, to my knowledge, has not been discussed elsewhere, and which can only be seen clearly in the original document, is the glyph 'Movement' that adorns the cape of Nezahualpilli in the centre of the wheel. This is an intriguing detail that suggests an identification of Nezahualpilli as the fifth sun, '4 Movement'.

Figure 6.6: The Boban calendar wheel (*c.* 1540).
Adapted from Echeverría y Veytia (1907).

volume). This scene represents the formation of the Triple Alliance between Texcoco's ruler Nezahualcoyotl and the Mexica ruler Itzcoatl (Dibble 1990: 177-179). Itzcoatl is placed in front of a building with a set of twin temples, recognizable as the *Templo Mayor*, the main temple of Tenochtitlan. Opposite, Nezahualcoyotl sits in front of a curious construction of two houses that face one another, the house to the left having yet another pair of opposed houses on its roof; this construction must represent the two *altepetl* or 'city states' of Tlacopan and Texcoco that constitute the Triple Alliance together with Tenochtitlan. The arrows and the shield with an obsidian sword placed between Nezahualcoyotl and Itzcoatl evoke the difrasismo *in mitl in chimalli*, 'the arrow, the shield'—a Nahuatl metaphor for war. Linked to the scene depicting the formation of the Triple Alliance, a Nahuatl text reads:

> Nezahualcoyotzin was ruler of Texcoco, Itzcohuatzin was ruler of Tenochtitlan. They declared the so-called water-conflagration (war). And Totoquihuatzin was ruler of Tlacopan. Not without purpose did they take that with which one was arrayed: precious capes, and breechclouts, and plaited collars and armbands, and leather bands for the calf of the leg, and head bands with sprays of quetzal feathers, labrets, ear plugs and blue sandals. They governed the city and the commoners. And in this manner were they trained, reared. (Dibble 1990: 177-179)

The third, upper scene depicts two men seated on reed mats dressed in Spanish garments facing each other. Their identification rests on the alphabetic annotations next to them, since no name glyphs appear

in the document. The man on the left is identified as Don Hernando de Chávez and the man on the right as Don Antonio Pimentel. Both were members of the Texcocan *cabildo* in the 1530s, and Pimentel became *tlatoani* of Texcoco in 1539 (Dibble 1990: 1976; Lopes Don 2010: 150). Behind Chávez is a depiction of a house in a Precolumbian style, although on its roof is placed a smaller building with a European style arched doorway. Opposite Chavez, Pimentel sits in front of what appears to be an open chapel, a Christian building characteristic of colonial mendicant architecture. Furthermore, Chávez and Pimentel are superimposed on two large somewhat curious glyphs or iconographic elements. The circular element to the left has what appears to be the characteristics of the water-glyph in Nahuatl writing, the thick and thin black lines in a rounded pattern posed on a blue background. The glyph to the right, under Pimentel, is a mountain-glyph, also with a blue interior. Considering the context, which is to present Chavez and Pimentel as individuals in charge of colonial Texcoco, the two objects might refer to the difrasismo *in atl in tepetl*, 'the water, the mountain', which alludes to the city state, in this case that of Texcoco. Compositionally, this difrasismo would parallel the difrasismo *in mitl in chimalli* in the scene below. Above Chavez and Pimentel, a Nahuatl line of text translates to "The alcaldes of Texcoco in the year 7 Rabbit, in the year [illegible]" (Dibble 1990: 176). A second Nahuatl text, underneath Chávez and Pimentel, reads: "and presently conditions are such in the city [on the day] 2 Water: alcaldes, regidores, alguaciles, alcalde mayor" (Dibble 1990: 176).[10] The relationship between these two phrases indicates that the document looks back at the year 7 Rabbit (1539), when the two individuals were sitting in the *cabildo* together as *alcaldes*, whereas 'presently' they together hold the posts of *alcaldes*, *regidores*, *alguaciles* and *alcalde mayor*, governor or tlatoani. Since Chávez never held the post as governor (Benton 2017: 116), the text supports the proposal that the manuscript was drafted during the reign of Pimentel from 1539 to 1546.

The calendrical part of the wheel takes the shape of a circular frame surrounding the three mythological-historical scenes in the centre. Moving from the periphery and inwards, the circular section consists of 1) an outer thick red or brown line, 2) a ring of glyphs with the names of the eighteen *veintenas*, or 20-day periods, of the Texcocan calendar, 3) a thin blue line, 4) Texcocan maize cob-glyphs placed under each *veintena*-glyph signifying '20' in the Texcocan scribal tradition (see Davletshin and Lacadena 2019: 310), 5) a trail of footprints, and 6) a ring of turquoise rectangles which probably alludes to the 52-year cycle, since the word for 'turquoise' in Nahuatl is *xihuitl* which also means 'year'. The calendar wheel's upper part, between 11 o'clock and 1 o'clock, breaks with this structure and is dedicated to the twenty day signs of the Texcocan 260-day count which have been arranged in four rows. The lowest row begins with the day sign 'Reed', followed by the five ensuing day signs in the twenty-day sequence of the calendar. The second row begins with 'Flint', followed by the next five day signs. The third row from the bottom begins with 'House', but the remaining glyphs are missing due to the cropping of the manuscript. The fourth, upper row is completely missing but would have been headed by 'Rabbit'. Between the initial glyph of each row and the five following glyphs, an annotation reads <nente>—perhaps *neenti*, 'for something to turn out to be in vain, to be frustrated' (Karttunen 1992: 168)—which indicates that we are dealing with the five last days of the 365-day year, also known as *nemontemi.* As Caso (1967: 72) first pointed out, the scribe engineered a system where each of the four possible scenarios of *nemontemi*-days are presented, one for each year bearer. If the year is a year named 'Reed', then its last five days are 'Jaguar', 'Eagle', 'Vulture', 'Movement', and 'Flint'. However, if the year is named 'Flint', then the last days are 'Rain', 'Flower', 'Crocodile', 'Wind', 'House', and so on. Thus, when the reader arrives at *Izcallami*, the last 20-day period, the five *nemontemi*-days bring the day count to 365, which completes the solar cycle.

On the outer rim of the wheel, the annotator made a running addition of the days. The state of the manuscript makes it difficult to discern all the numbers, but it appears that the annotator counted in tens, writing two numbers on top of each glyph. On the third glyph he wrote "50-60", and on the sixth glyph "110-120", on the twelfth glyph "230-240" and so on, the last discernible annotation being that of the seventeenth *veintena*, "330-340". Alphabetic annotations are also added to each *veintena*-glyph, supplying the Nahuatl name of the *veintena* in Latin letters. Above each *veintena* glyph, the gloss 'Veyte dias' refers to the twenty-day duration of the *veintena*.

The calendar in the Boban wheel is thus centred on the 365-day cycle with emphasis on a division into eighteen 20-day *veintenas*. The sequence of *veintenas* begins at the position corresponding to 1 o'clock and is initiated with a depiction of an individual standing with one leg in front of the other. His torso is twisted backwards, his right arm reaching out behind him while his left arm is stretched out in front of him. To his left, a Nahuatl annotation reads: "xiuh [illegible]", the full reading of which Dibble (1990: 175) suggests could be either *xiuhixua*, 'the herb grows' or 'the year is born', or *xiuhixualiztli*, 'the growing of the herb' or 'the birth

[10] After "alcalde mayor" the text continues with what appears to be one more title, which Dibble does not mention in his translation. I have, however, not been able to propose another reading from the part that is still visible.

of the year'. At the feet of the individual, the trail of footprints takes its beginning. Then follows the section of eighteen *veintena* glyphs. After the eighteenth *veintena*, standing at what corresponds to 11 o'clock on the wheel, we meet the same individual as before, this time terminating the *veintena* sequence. At this position, he has both arms stretched out in front of him in a shifted position, reminiscing the bodily position of the deities in the divinatory almanacs. Behind him, the annotation reads: "xiuhca[illegible]". Dibble (1990: 175) suggests that the annotation in full probably read *xiuhcayotl*, 'the affairs of the past year'. To the right of the individual is an unidentified glyph consisting of a red m-shaped element on top of a curved green element.

The *veintena*-glyphs in the Boban wheel are written according to the principles of Precolumbian logophonetic writing (see e.g. Davletshin 2021; Lacadena 2008). This is seen, for example, in the use of phonetic complementation in the glyphic compound **KECHOL-ol**, for *Quecholli*, 'roseate spoonbill' the name of the fourteenth *veintena*, consisting of a bird-sign for **KECHOL** and the rubber ball for **ol** (see Davletshin 2021: 48 for syllabary). Other *veintenas* are written with a single logogram (e.g. **TEK^{W}**, for *Tecuilhuitontli,* 'feast of the small lords'), or with a combination of logograms and phonograms (e.g. **TOS-so**, for *Tozoztli*, 'vigil'). These signs demonstrate that the scribe responsible for the Boban calendar wheel was intimately familiar with Precolumbian modes of expression including Nahuatl writing. This is an important point that I return to below, because it suggests that this document, to a considerable extent, was composed using Precolumbian, rather than European, conventions.

The Boban calendar wheel and its Precolumbian forerunners

As we recall, the main critique of the idea that the Precolumbian circular calendars, such as the Aztec calendar stone, could be forerunners to colonial calendar wheels is grounded in a hypothesis that their function was too far removed from that of the colonial wheels. It is therefore relevant to ask what purpose the calendrical part of the Boban wheel served and how it compares to the purposes we ascribe to the Precolumbian examples discussed above.

We can note that there are no direct references to specific dates in the Boban wheel nor is there anything in the alphabetic annotations that refers to the *veintenas*. The text contains only a reference to the day '2 Water' in the year '7 Rabbit', but neither is written with Aztec glyphs in the circular calendar. It thus seems more likely that the calendrical section is a symbolic reference to the passing of (calendrical) time.

A plausible interpretation is, then, that the circular calendar supplemented the scenes in the centre, by underlining the important temporal dimension in the historical narrative. The calendar would emphasise the connection between the colonial present and the mythistorical scenes of the Chichimec past. This type of function recalls most strongly the calendrical sequence in the Aztec calendar stone. In this monument, the twenty day signs enclose the past and present epochs of the Mexican creation mythology. In this way, both the Boban calendar wheel and the Aztec calendar stone have calendrical sequences framing and integrating scenes from the past with the present state of affairs.

There are other similarities between the Boban wheel and the Precolumbian examples that can also be mentioned. The ring of *xihuitl*-signs found in the Boban wheel recalls a similar ring of turquoise symbols on the Aztec calendar stone. In both cases, this ring may have evoked the passing of years (recall that *xihuitl* means both 'turquoise' and 'year') or even been a direct reference to the 52-year cycle. Francisco del Paso y Troncoso (1899: 302) counted fifty-two turquoise-signs when he examined the Boban wheel in the late nineteenth century where the document was in a better condition than it is today.

The strict vertical symmetry that permeates the Boban wheel also clearly testifies to its embeddedness into the Precolumbian visual tradition. Here we may compare it with page 30 of the *Codex Borgia*, where wind deities oppose one another, or the *Mexicain 20* where female and male deities are placed facing each other, or even with the Aztec calendar stone, the symmetry of which is striking. The overall design of the Boban calendar wheel with a circular calendar sequence framing a symmetric relation of events or elements places it in close proximity to the Precolumbian examples.

The above considerations suggest that the Boban wheel owes both its conceptual contents and visual composition mainly to the Precolumbian tradition. In contrast, none of the traits discussed so far appear to be influences from European zodiac wheels. Nevertheless, one aspect that may be ascribed European influence still needs to be discussed. Whereas the three Precolumbian examples convey the 260-day calendar, the Boban calendar wheel is centred on the 365-day year. Scholars such as Spitler and Aveni have interpreted this divergence as a result of a Europeanisation of the Texcocan calendar. I will now briefly discuss the implications of this claim taking into consideration the conclusions reached so far.

The question of the 365-day year

It is commonly known that apart from the cycle of 260 days, the Aztecs also kept track of a solar year of 365 days that was divided into eighteen periods of twenty days plus five additional days at the end. In 1951, George Kubler and Charles Gibson demonstrated, on the basis of colonial sources, that the names of these eighteen periods had regional variation. They showed that those regions of Mesoamerica that were under Aztec rule tended to begin their year with *Atlcahualo,* whereas those outside the realm of the Aztec empire began their year with *Tlacaxipehualiztli* (Kubler and Gibson 1951: 46-52). These observations stand out as a clear indication that the eighteen periods were widely known and kept in Central Mexico.

Nevertheless, some scholars have argued that the 365-day year was not an independent calendar for keeping track of time, but rather a festival cycle that was subsumed under the 260-day calendar and recorded as part hereof. Among them are Betty Ann Brown (1977: 63-64), Spitler (2005a: 143-144), and Díaz (2020: 451-452; see also Díaz, this volume). One main hypothesis among these scholars is that the eighteen 'labels' known in various variants from the colonial sources, as described by Kubler and Gibson, were not names of periods of twenty days, but only the names of specific feasts.

The crux of the matter is the lack of any recorded evidence of the 20-day periods predating the conquest. The Aztec *veintena*-glyphs that exist in a handful of colonial sources including the Boban calendar wheel do not present convincing evidence that they designate periods and not just the names of feasts.[11] The glyphs, as they are used in the colonial documents, have been seen as resulting from a 'Europeanisation' that transforms the eighteen feast-names into names of eighteen 'months' of twenty days, inspired by the twelve Julian months of the European 365-day year. This is not the place to review all the evidence that speaks for or against this hypothesis, but I do want to discuss the role of the Boban calendar wheel in this regard, since this document has been used as support for the argument.

Spitler argues that the Boban wheel's representation of the 365-day year divided into eighteen 20-day periods reflects "a practice born of the interaction with the Spanish and their solar year divided into months" (Spitler 2005a: 159). She also notes that the very format of the calendar in the Boban wheel "is an innovated form influenced by European printed illustrations" (Spitler 2005a: 158). This argument about the Boban wheel is repeated by Aveni (2012: 50) who refers to Spitler. Díaz also argues that the Boban calendar wheel is "an indigenous document constructed from a calendar wheel typical of European visual culture which has been efficiently manipulated in order to integrate contents from the Nahua calendar" (Díaz 2012: 25).[12] She concludes that "the time projected in the [Boban calendar wheel] is a new time, reordered around the year, since now it is the *veintenas*, as equivalents to the European months, that are placed highest in the hierarchy displacing the signs and numerals of the *tonalpohualli*" (Díaz 2012: 32-33, translation by the author).[13]

Based on the above comparison between the Boban wheel and the Precolumbian examples of circular calendars, it could appear that even if it is true that the scribes had not been accustomed to portraying their 365-day year as an individual cycle, they appear to have embraced this potentially new configuration. The 365-day year divided into *veintenas* appears perfectly integrated into a document with iconography that otherwise adheres fully to Precolumbian standards. If the Boban wheel is testimony to a change, this change remained compatible with Precolumbian ways of integrating calendrical sequences into iconographic scenes.

Finally, it is interesting to note the existence of two other, apparently unrelated calendar wheels also portraying the eighteen *veintenas*. These are found in Giovanni Francesco Gemelli Careri's *Giro del mondo* (1699-1700) (Figure 6.7) and in Diego Muñoz Camargo's *Relación de Tlaxcala* (*c.* 1580) (Figure 6.8). Each of these two wheels as well as the Boban wheel have a unique set or combination of glyphs, showing that we are not dealing with cognates of one original wheel.

As examples of how the wheels vary, we can look at the feasts *Teucilhuitontli*, 'small feast of the lords', and *Teucilhuitl,* 'feast of the lords'. In the Boban wheel they are represented as two different logograms in the shape of lords, the second with a mat-throne which appears to indicate that this lord is of a higher status than the other (Figure 6.9a-b). The two signs can thus probably be transliterated as **TEK^{W}**, *teucilhuitl,* 'feast of the lords', and **WEY TEK^{W}?**, *huey teucilhuitl*, 'feast of the high lords'. In the Gemelli Careri wheel, different signs are used to represent the same name. In this wheel, the

[11] Some scholars saw these glyphs as colonial innovations created to meet the administrative and religious requirements of the Spaniards (Brown 1977: 338-339; Kubler and Gibson 1951: 39-41; Spitler 2005a: 136). Today, the consensus appears to be that these glyphs were employed before the conquest (Díaz 2020: 399, 2018; Nicholson 2002: 100).

[12] "un documento indígena construido a partir de una rueda calendárica propia de la cultura visual europea—y eficazmente manipulada para integrar contenidos del calendario nahua."

[13] "...el tiempo proyectado en el documento es un nuevo tiempo, reordenado en torno al año, pues ahora son las veintenas, equivalentes a los meses europeos, los componentes que mayor jerarquía presentan en la composición, desplazando a los signos y numerales del tonalpohualli."

Figure 6.7: The wheel from Gemelli Careri's *Giro del mondo* (1699-1700). Adapted from Echeverría y Veytia (1907).

two glyphs both consist of two signs, a ruler's diadem for **TEK^{W}**, and the pinwheel-glyph which is another logogram **ILWI**, from *ilwitl*, 'day' or 'feast' (see Helmke and Nielsen, this volume; Díaz, this volume) (Figure 6.9c-d). Here the difference between the two feasts are given by using a small and a large version to evoke the difference between **TEK^{W}**, *teucilhuitl,* 'feast of the lords', and **WEY TEK^{W}**, *huey teucilhuitl*, 'feast of the high lords'. The ruler's diadem is partly corrupted in the Gemelli Careri wheel, presumably because Gemelli Careri copied his wheel from an unknown indigenous original without knowing what he was copying.

The regional variation of *veintena*-names described by Kubler and Gibson is also reflected in the wheels. The Boban calendar wheel has *Cuahuitlehua,* 'raising of trees', and *Tlacaxipehualiztli,* 'flaying of men', as the first two feasts. *Cauhuitlehua* is represented with the tree-logogram **K^{W}AW**, from *cuahuitl,* 'tree', and *Tlacaxipehualiztli* is represented with what could be the logogram **TLAKAXIPEWALIS**. In the Muñoz Camargo-wheel, the two first feasts, *Xilomaniztli,* 'offering of young maize', and *Coailhuitl,* 'feast/day of the serpent', are not found in any of the other two wheels (Figure 6.9e-f). The glyph for *Xilomaniztli* consists of the

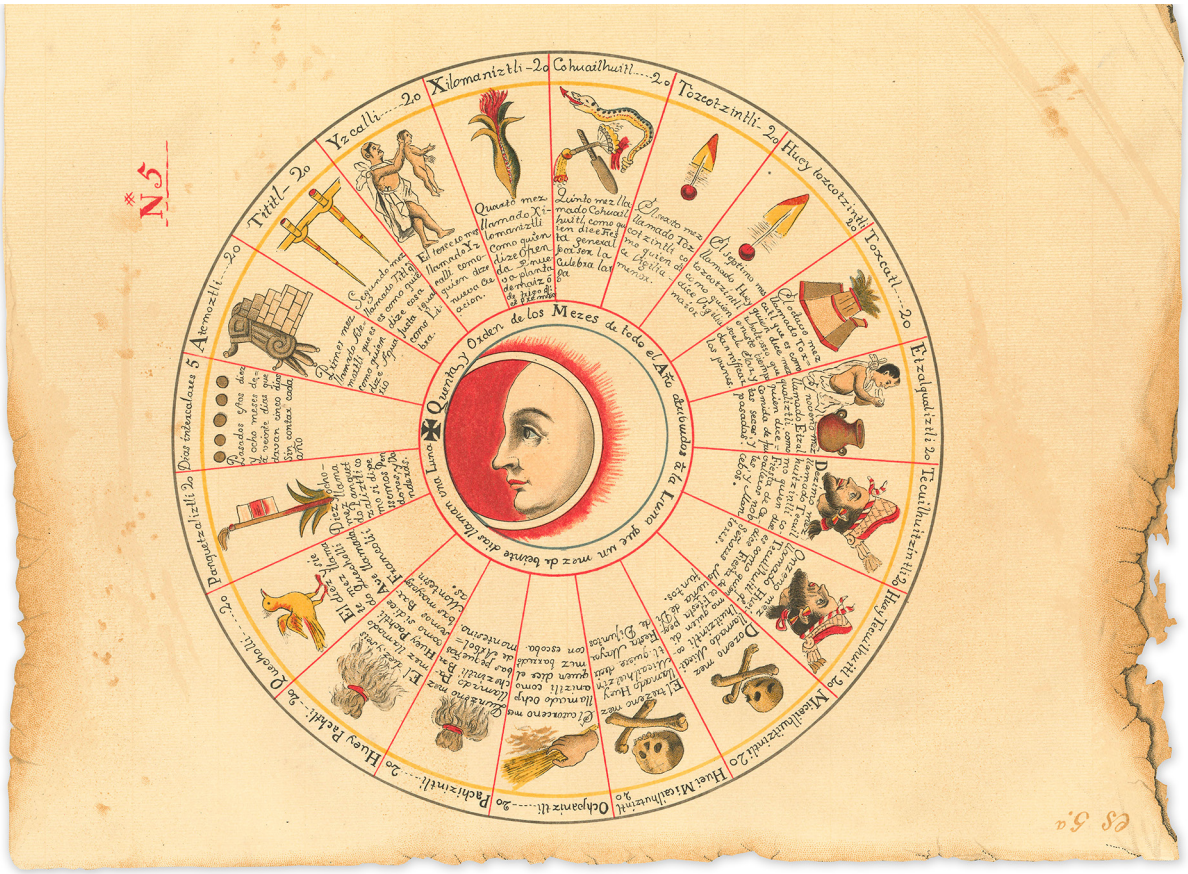

Figure 6.8: The wheel from Muñoz Camargo's *Relación de Tlaxcala*. Adapted from Echeverría y Veytia (1907).

logogram **XILO**, from *xilotl* 'young maize'. The glyph for *Coailhuitl* consists of two signs, the logogram **KOA**, from *coatl* 'serpent', and a sign consisting of a fan and a tobacco device presumably representing the logogram **ILWI**, 'feast'.[14]

As the varied choices of glyphs show, these three *veintena*-wheels were not copies of each other, but rather individually produced repertoires of *veintena*-glyphs placed in a circular format. The examples also demonstrate that the glyphs were produced by scribes who mastered Precolumbian writing. Any potential change in the form of an emphasis of the 365-day calendar, which these three colonial documents possibly embody, was thus conveyed using traditional modes of expression. Whether or not something resembling the colonial *veintena*-wheels existed prior to the conquest, these three examples suggest that multiple scribes viewed the calendar wheel-format as a meaningful way of representing their cycle of eighteen feasts or *veintenas* in a colonial context.

Conclusion

The circular shape of the colonial calendar wheels has been a point of dispute. Some have seen the wheels as modelled upon European calendar wheels and thus interpreted them as a sign of change in indigenous calendrical practices, while others have argued that their circular shape derived at least partly from a Precolumbian tradition. In this contribution, I have mainly explored the 'continuity' hypothesis which until now has been insufficiently investigated. I have been able to reject the contention sometimes voiced that no Precolumbian circular calendars exist, or that they are not comparable to the colonial calendar wheels because they are too different in terms of function. In contrast, I showed significant conceptual and visual overlaps between Precolumbian circular calendars and the colonial Boban calendar wheel.

Then there is the question of whether or not the colonial calendar wheels still embody some kind of cultural change, notably by representing the 365-day year rather than the 260-day cycle. This is a question that remains open. Nevertheless, by pointing to the existence of two other *veintena*-wheels manufactured

[14] I am grateful to Albert Davletshin for discussing these glyphs with me and aiding with possible readings.

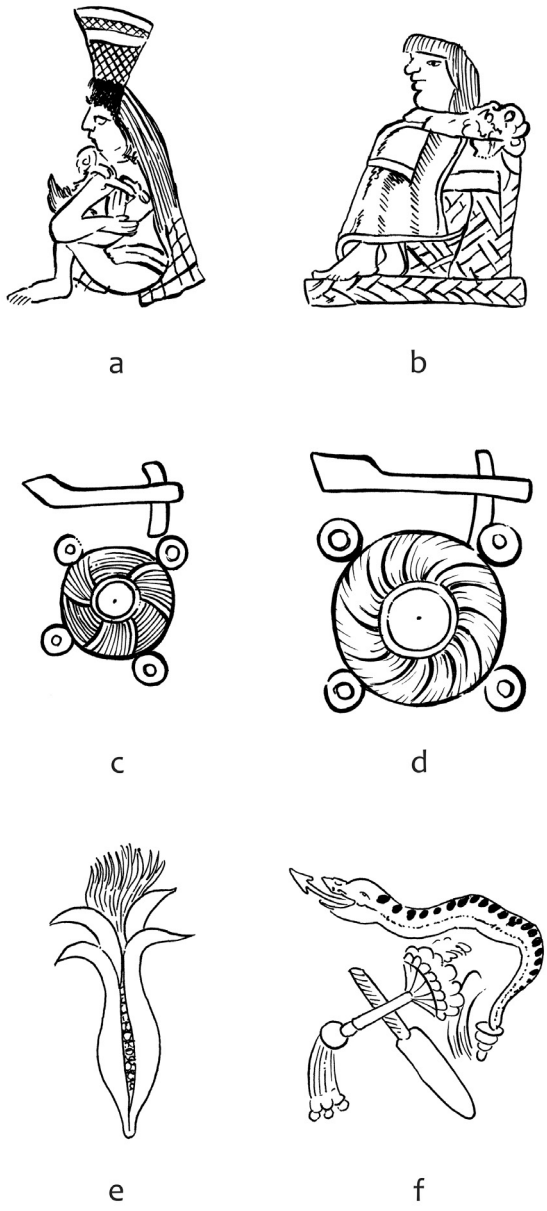

Figure 6.9: *Teucilhuitontli* and *Teucilhuitl*.
a)-b) the Boban wheel, **c)-d)** the Gemelli Careri wheel, **e)-f)** the Muñoz Camargo wheel (drawings by Christophe Helmke).

independently from the Boban wheel, I argued that any potential change appears to have been compatible with Precolumbian modes of expression and iconographic uses of calendrical frames.

To conclude, the colonial calendar wheels, such as the Boban calendar wheel, are some of the few possibilities we have of accessing the processes of change and continuity in the Central Mexican calendar subsequent to the conquest. To understand these processes, then, it is, as I have suggested in this contribution, all the more important to be aware not only of the incoming tradition of European formats and concepts, but also of the Mesoamerican precursors that in many cases continued to influence and provide meaning to the work of colonial authors and artists.

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Chapter 7:
The Nahua Year Revisited:
Translating Temporal Conceptions[1]

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Dates are among the most common written registers found in the Prehispanic sources of Central Mexico. Nevertheless, most of our knowledge about Nahua calendars is based on descriptions from Colonial texts, where we learn to identify two apparently autonomous counts (the *tônalpôwalli* and the *xiwitl*) that only coincided once every 52 years, when a *xiwpôwalli* was completed. In the next pages, I will focus on some problems derived from the analysis of data recorded in Nahua sources. My aim is to direct our attention to new directions and try to find the traces of a chronological conception that may have been lost in translation. In the first part of the paper, I will focus on Prehispanic sources in order to identify the rules of operation of this foreign chronological conception. In the second part, I follow the transformations suffered by the original repertoires in the colonial context.

Specifically, this paper investigates the reinvention of the *veintenas* as an autonomous calendar. A selection of cases will demonstrate the way in which different agents succeeded in disassembling the Nahua chronological machinery, obtaining loose pieces (dates) that could be correlated with the days of the Christian calendar, thus, creating a "universal" indigenous year consisting of *veintena*-months. In this effort, the production of new images was a central strategy, and the transformation can thus be traced effectively in the graphic repertoire.

Counting Time: Measures, Rhythms, Arithmetic

Why did the Nahua of the Postclassic use a special numerical system to register time? This was one of the main questions that struck me when I first began studying codices from Central Mexico. The distinction between the numerical system used for time-related matters and the system used for non-time-related matters can be explained by two recourses: the representational systems derive from different writing traditions, or they respond to different conceptions, classifications or natures. Both options may be correct.

Revising different sources from Central Mexican societies, we recognize two patterns for writing numbers: the bar and dot-system, and the logogram register. The bar and dot notation is linked to calendrical and arithmetical practices that go back to the Preclassic period where it can be attested in Maya and Mixe-Zoquean inscriptions. In this system, the dot represents the unit and the bar means five. Following the vigesimal system, Maya scribes aligned dots and bars in rows and columns in order to count sets of power of twenty (i.e. 20, 400, 8000). This graphic system differs from Nahua Postclassic arithmetic repertoire, because the Nahua assigned specific logograms to represent modules of 20 elements instead of combining dot, bars and positions. In this system, a dot is read as '1', a banner '20', a bunch of hair '400' and an incense pouch '8000' (Figure 7.1). Nahua arithmetical registers do not use a system of positions equivalent to the Maya, because numerical signs follow the same principles as the Nahua writing system. In this system, elements follow a free assemblage in autonomous emblematic compositions, contrasting with other writing and notational systems that used columns, rows, sentences or any other linear structure (see Lacadena 2008).

Nevertheless, Nahua dates do not follow the two aforementioned arithmetical traditions. The numerical component in chronological texts of Central Mexico is usually represented in two forms: first, the dot and bar format (e.g. Teotihuacan and Xochicalco); second, the single dot register (e.g. Nahua and Mixtec dates from Postclassic period). In this system the numerical coefficients of the dates are written only with dots, never with bars – although the Mixtec used to group the dots in linear sequences of 5 units to facilitate the reading. As the account of time encompasses only 13 numerals, it is relatively easy to write and read any given date by counting the succession of dots.

If we read the different sections of the *tônalâmatl,* the books, or codices, used as divinatory almanacs to follow the count of days, we will observe a peculiar

[1] Due to the untimely passing of Ana Díaz, she was unable to review this paper before publication. The editors of this volume have kept themselves solely to copyediting, allowing Ana's analyses and opinions to shine through as best possible. Despite this, we hope and believe that Ana would have approved of the paper in its current form.

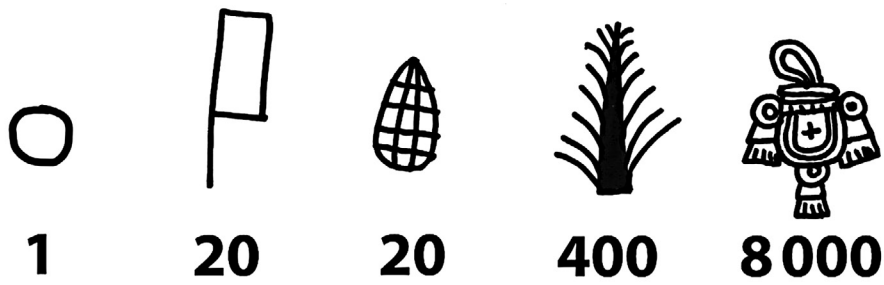

Figure 7.1: Nahua numbers.
Dot equals one; the banner equals 20, but some Tetzcocan documents used the cob (1×20); a bunch of hair means 400 and a bag 8000 (drawings by Ana Díaz).

employment of these elements. In most of the cases, each date or temporal unit is represented by a "single" dot, not by a sequence of circles, because what gives the date its arithmetical value is its position in relation to the other elements of the whole system. Then, these dots are not the coefficients of the dates, instead they work as intervals. But the positions occupied by these single dots differ from the positions displayed in vigesimal bar and dot Maya notational system. They refer to real positions in space. So, time and space are intimately related in this type of notation.

The relation between numbers and positions in Nahua-Mixtec dates can be seen in certain pages of the *tônalâmatl*, where the *tlahkʷîlôhkeh,* the painter-scribes, abbreviated the dates by representing them as "single" dots, which occupy a position in the whole composition. This arrangement is found in the first page of *Codex Fejérváry-Mayer*, where many of the days in the *tônalpôwalli*, the 260-day calendar, are represented by dots distributed in the cosmographical image. The *tlahkʷîlôhkeh* could also omit the use of dots by designing a visual correspondence between numbers and positions in tables and graphics. For example, in the first section of codices *Borgia*, *Vaticano B* and *Cospi*, the painters used a table to assign a specific numerical position to each date of the *tônalpôwalli,* in an arrangement similar to the Periodic table of elements. Here, each column corresponds to a number, which increases in relation of one number by column (Figure 7.2).

What are the implications of the use of two different numerical systems to count things and units of time, respectively? Why use a different notational system for counting temporal units? Here, we can recall that Nahua/Mixtec dates can be represented by single dots as spatial markers because time and space are intimately related and cannot be separated. This implies, that in identifying a date, its position and arrangement in space may have been more important than its arithmetical value (which is implied by the order of its incidence on the list). Another example of this use in Nahua/Mixtec visual culture is found in the footprints that follow a path. Here, the footprints refer to distance (in space, but also in time) from the point of departure to the place of destination. In this pattern the number of steps is not relevant, because the path of footprints through the landscape reproduces the effect of movement, creating a narrative or sequence through space. The same seems to happen with dates, as each unit of time also occupies a unit of space. Thus, the reader of the *tônalâmatl* moves, in the correct order, from date to date, from position to position.[2] Therefore, the accounts of time painted in the *tônalâmatl* required not only to name each temporal unit, but to represent it in space. And sometimes they also sought to reproduce its qualities, as form, direction, colour and sequence. Here are some examples.

The Nahua glyph for day (*ilwitl*) is usually represented as a jewel divided into four sections, each associated with a colour (usually red, yellow, green and blue) (Figure 7.3a). Nights were depicted as starry eyes. Page 12 of *Codex Azcatitlan* the *tlahkʷîlôh* depicts an excerpt of the episode relating the arrival of Huitzilopochtli to *Coatepec*, the 'Serpent Hill' (Figure 7.3b). In the image, the historian registers a list of 4 nights and 3 days, following the logic of the footprints in a path: night + day + night + day + night + day + night. In this case, the glyphs are connected by a thread indicating the order these follow. The use of lists or ordered successions for presenting accounts of days and nights was a common resource also in Mixtec sources. For example, the lower row of the first page of *Codex Vindobonensis* (erroneously numbered as page 52) shows the moment when the 20 days and nights are numbered, referring to their organization (Figure 7.3c). In this image, the painter used the Mixtec code

[2] An example of this movement is reproduced in a Colonial Zapotec booklet, which shows the displacement of the time over the realms of the cosmos (house of earth, sky and underworld). Tavárez (2020) identifies each position as a level of a stratified cosmos, but Oudijk (2020: 324-247) identifies a greater locus of operation that implies movement of time (for the author is not properly time, but its mantic characteristics) over space, following two associative fields, which he identifies as vertical and horizontal.

Figure 7.2: Detail of the first section of the *Codex Borgia* (page 5).
The reading begins at the lower right corner, (with 'alligator'), and reading leftwards along the lowest row ('wind', 'house' and 'lizard'), before reading along the second, third and fourth row, ending at the upper left corner with 'flower' (after Nowotny 1976. © Akademische Druck- und Verlagsanstalt).

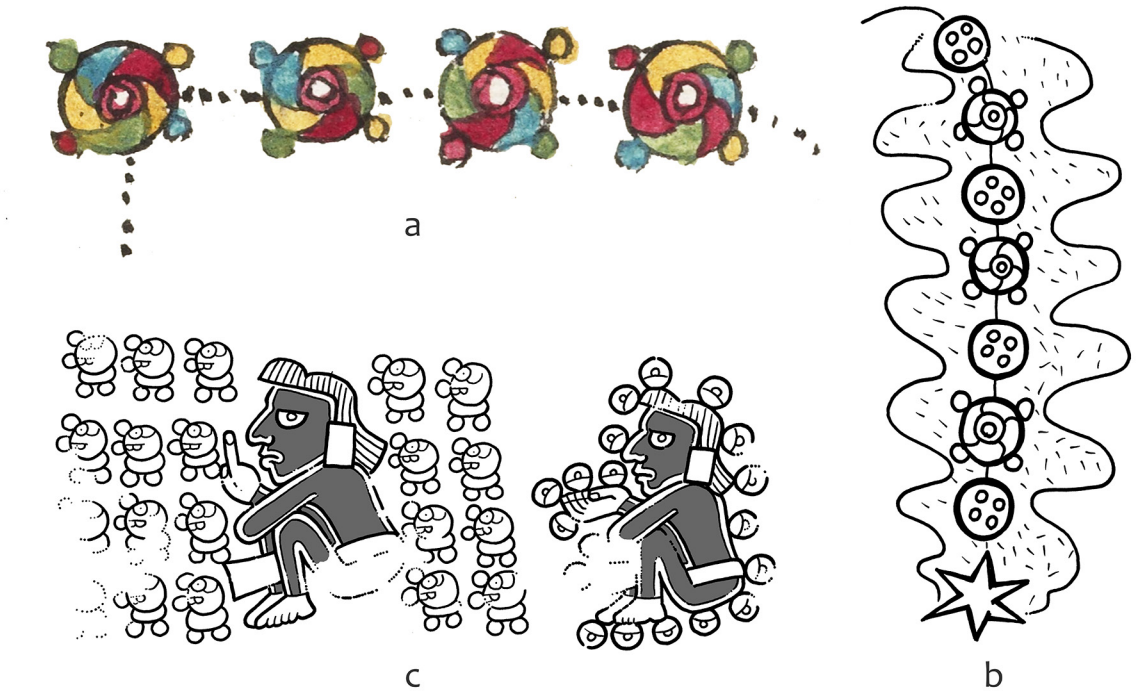

Figure 7.3: Sequence of days (drawings by Christophe Helmke).
a) four days (*ilwitl*) listed at the *Codex Mendoza* (fol. 57r) (Bodleian Library MS. Arch. Selden. A. 1 © Bodleain Libaries, University of Oxford, reproduced under Creative Commons license CC-BY-NC 4.0). **b)** A succession of four nights and four days in vertical arrangement is listed in the *Codex Azcatitlan* (folio 6r). **c)** Two characters counting the 20 nights and the 20 days of the account (*Codex Vindobonensis*, p. 52).

for day and night. Nights were depicted as starry eyes, following the same visual code as the Nahua sources, but days were not represented by the glyph *ilwitl*, which is a Nahua logogram. In this codex, days are depicted as small round creatures, of five different colours. Manuel Hermann identified these as maize seeds. If this is the case, the representation reveals the connection between maize used for divination and the days of the *tônalpôwalli*.

In these examples we can observe that each logogram (be it the Mixtec maize, or the Nahua jewel) refers to the word 'day'. When the *tlahkʷîlôhkeh* need to present days in a group, they do not use an arithmetical marker, but organize them in a list, where each unit takes a position. Thus, they are organised like the footprints in a path, but here, time displays a specific, numbered, order. The same pattern is followed in the different sections of the *tônalâmatl*, where the single dots work as spatial markers for the days. Therefore, the dots are not proper numbers, but spatial positioners. This practice differs from the notation traditions found in Maya codices, where coefficients are written in red ink and intervals of days are rendered in black ink. *Tônalâmatl* from Central Mexico seem to use the dots for intervals of days, and in very few cases these dots work properly as date coefficients (*Codex Borgia*, p. 52-53 and *Codex Vaticanus B,* p. 80-84).

The analysis offered by Michel Oudijk (2020) in the study of *Codex Vaticanus B* is relevant for this discussion, because by comparing colonial explanatory texts of the Zapotec Calendars with sections of Prehispanic *tônalâmatl*, Oudijk shows that the movement of mantic qualities over time and space, in vertically and horizontally ordered sequences, is part of the logic of operation of the *biyé* (Zapotec name for the account of time, equivalent to the Nahua *tônalpôwalli*).

The special status of numbers found in Nahua arithmetic of time is also evident in linguistics. Danielle Dehouve reminds us of an aspect, which is relevant for the discussion, because in Nahua thought, temporal units are differentiated from the vast universe of countable things:

> Nahuatl [...] does not use plural for inanimate objects but recurs to "classifiers". Thus, to count two *tortillas*, it applies the classificatory *tetl* ('stone'), which serves to count round things: *ontetl tlaxcalli* ('two-stones of *tortilla*'). Periods of time constitute its own classifier, like *ilhuitl* [...]. Thus, they counted 'four [fasting] days' as *nahuilhuitl.* (Dehouve 2011: 72, translation by the author).

This means that the Nahua attributed to time (and temporal units) a special quality that distinguishes it from other countable things. This argument is relevant because it clarifies a main difference between Nahua and Christian time.

Christians inherited and adapted ancient chronological conceptions from Classic literature, organized in cosmographical models by authors such as Aristotle and Ptolemy. In this system, time is astronomical and metaphysical. Astronomy was a liberal art that concerned the laws of the celestial bodies and the relations that these maintain with each other and with the earth (Sevilla 1994: 445). Therefore, astronomy was a type of knowledge built upon figures, tables and numbers, all linked to stars and heavenly bodies. In the Christian tradition, the movement of celestial bodies was translated into chronological periods giving time its measure and rhythm. Men and earthly creatures are not part of this scheme, because life itself is alien to the chronological (metaphysicial) sphere. As heirs of this tradition, we are prone to assuming that all the societies (especially more complex civilizations) have also developed their chronological principles from a similar relationship with astronomical observations. Thus, we assume that astronomical development is a universal paradigm for counting, understanding and experiencing time.

Discussing the examples seen in Figure 7.3, we identified some of the elements that the Nahua and Mixtec used to represent temporal concepts and units. We saw that starry eyes were used to refer to nights, showing one of its characteristics (stars shining in the dark). But these elements do not seek to identify astronomical phenomena. This hypothesis is supported if we analyse the graphic system of representation in a broader sense. Although there is a strong connection between the sun and the day (e.g. Tonatiuh means "the one who goes shining [*tonalli*]"), the sun was not used as a logogram for day, which was instead represented with the *ilwitl*-sign (represented in two variants: as a jewel, and as inverted double-volutes) (see Thouvenot 2015: 102-104). Returning to the night case, if the painters were searching for astronomic accuracy, they would have used moons or different starry markers to identify celestial dynamics. Nevertheless, the Nahua used different visual metaphors to refer to day and night, but none of them used figures that referred to astronomical qualifiers which helped to understand specific phases or periods (like drawing sequences of moons or suns). This intuition is strengthened when reading Nahua texts from the 16th century. Here, the reminder of Dehouve becomes extremely useful.

In the last page of a *Psalmodia Christiana*, a Nahua reader wrote a note to remember the order of the planets in the Christian Cosmography. The text states:

> In izCatqui Ynic sentlamantli Yn ilhuicatli Yn ipa[n] / cate Yn ixquichtin Yn ilhuicame, Ytoca

> cielo chris/talino quitosnequi tehuiloYlhuicatl, auh Ynic / ontlamantl[i] Ylhuicatl, Ytoca firmamento quitosnequi / citlalilhuicatl Ypanpa Ytech cate in sitlallime Yni[c] etla/mantl[i], Yn ilhuicatl Ytoca, cielo saturni, quitosnequi sa / no **sentetl, sitlali Ytech ca, Ytoca saturno,** auh Ynic nau[h]/ tlamantl[i] Yn ilhuicatl ytoca, cielos Juzid, quitos/ nequi Yn ilhuicatl sano **sentetl sitlalin Ytech ca / itoca Jubiter**, auh Ynic macuilamantli Yn ilhuicatl, / Ytoca cielos marti quitosnequi sano **sentetl citla/ lin Ytech ca Ytoca, marte**, auh Ynic chi no. 6 Yn ilhui/catl Ytoca cielos suni, quitosnequi Yn ilhuicatli Y/tech ca Yn tonatiuh, aun Ynic / Yn Ilhuicatl Ytoca / cielo de benus quitosnequi Yn ilhuicatl oc no **sen/tetl citlali Ytech ca itoca benos**, auh Ynic chicuatlamantli, / Yn ilhuicatl Ytoca mercuri, quitosnequi Yn ilhuicatl oc no **/sentetl citlalin Ytech ca Ytoca, mercurijo**, auh Ynica chiuh/nauh tlamantli Yn Ilhuicatl Ytoca cielos llune qui[toz] nequi Yn ilhuicatl Ytech ca Yn metztli [...]

(the bolded typeface are provided by the author to highlight the structure; See Díaz and Alcántara 2011; translation provided below)

> Here is the first sky, the one that is above all the skies, its name is "crystalline sky", this means 'crystal sky'. The second heaven, is called "firmament", this means "sky of stars" because the stars are within it. The third is the sky named "<saturni> sky", this means that the only star that is in it is the one named Saturn. The fourth is the sky named "<Juzid> [Iovis] sky", this means that the only star that is within it, is that named Jupiter. The fifth is the sky named "<marti> sky", this means that the only star that is within it is the one named Mars. The sixth is the sky named "<suni> [solis] sky", this means that the only star in it is the Sun. [small image of a sun] The seventh is the sky named "sky of venus", this means that the only star that is within it is the one named Venus. The eighth is the sky named "mercuri", this means that the only star that is within it is the one named Mercury. The ninth is the sky called "<llune> sky", this means that the only star that is in it is the Moon. [small image of a female face]

It is not my intention to analyse this text in depth, but to highlight two facts that we can deduce from this source: (1) there is no Nahua word or category for planet, as the writer uses *citlalli* to refer the 'only star' that Christians called Venus, Saturn, Mars, etc. In fact, the absence of proper personal names for each planet is also significant. (2) Stars are counted with the *tetl* numeral qualifier: *sentetl citlalin*... (one-stone of star), for meaning "the only star".

The grammatical principle indicating that periods of time constitute their own classifier, shows here that stars and planets are not included in this range. They are things that can be counted, so their nature is not properly temporal.

This argument, based on linguistics, supports the hypothesis derived from the analysis of the graphic elements used by the Nahua to refer and count time units, including images, logograms, and arithmetical notations. In sum, time is a sphere that does not belong to the set of physical things. Time is a system that requires its own arithmetic and grammatical rules, which indicates that its nature may also be different from that of the creatures and things of this world. To follow this argument, we need to trace the origins of the system.

The Origins of Time in Nahua Sources

The tallying of time in the 260-day calendar (*tônalpôwalli* in Nahuatl) is one of the earliest cultural productions from this portion of the New World. The system has been in use since the Preclassic and is still in operation to a limited extent in some traditional communities today.

Theories about the natural cycle that gave origin to this unusual count have circulated since early colonial times and continue to do so. The first group of hypotheses is related to astronomical calculations, and locates the origin of the 260-day cycle in the synodic cycle of Venus, the zenith passage of the sun in a certain position, or in the duration of lunar cycles (Peeler 1989: 292-293; Galindo 1994: 50; Malmström 1973, *apud* Edmonson 1995: 156). The second hypothesis was produced from ethnographic research when Tedlock (1982) found that 260 days is close to the human gestation period. The third alternative identifies the *tônalpôwalli* as a product of mathematical calculation, because 260 equals 13 times 20. The reason to choose the number 20 is clear, since the inhabitants of these regions used a vigesimal notation system. However, the origin of "13" is not evident. Hence, the problem of the origin of the cycle cannot be solved and will always involve some degree of speculation depending on the methodological approach. Paradoxically, chronicles from 16th century offer an answer to this problem, as voiced by the users of the system, but their testimony may be unreliable. Their answer does not fit into our expectations, and no scientific knowledge can be identified in this explanation.

According to the Nahua themselves, the 260-day calendar was created through an arbitrary and random process.

The story goes that Oxomoco and Cipactonal, the wise ancestors of humankind, invented the count of 20 signs by arbitrarily naming each day (*Historia de los*

mexicanos por sus pinturas, see Tena 2011a: 27-29). In another version, they were helped by their grandson, Quetzalcoatl, who appears to have introduced a game were the names of the 20 signs were randomly chosen (Mendieta 2002: 210-211; *Anales de Cuauhtitlán*, see Tena 2011b: 27-29). The importance of this episode should not be underestimated, since the Nahua here provide a clue to understanding if not the origin, then at least the nature of the system. The (real) origin of the signs is lost in the past. Therefore, to identify the source of the count is irrelevant for the Nahua. What is important is that the count has remained in use since ancient times. The system precedes the beginning of the current world (and the previous four cosmological suns), so it is impossible to know its origin. Contrary to Christian cosmology, Nahua time precedes the World, the rulers that govern the world, and the creatures and deities that live within it. Thus, time precedes the origins, the events, and even the very existence of astronomical bodies. It has its own measure, nature and rules of operation. This conception does not follow scientific paradigms because it belongs to another sphere of knowledge. As Nahua linguistics show, its nature belongs neither to the animate, nor to the inanimate beings. Like the Christian god, or the First Mover of Classic Metaphysics, the *tônalpôwalli* is alien to worldly existence, preceding the realm of the sky and its celestial bodies, ruling over all *phenomena* and creatures. Its origin cannot be deciphered because it is itself the source of origin. This explanation is evident in the Nahua conception of time in the 16th century, which may of course have changed from the Preclassic.

The signs (and numbers) of the *tônalpôwalli* name the days, years and cosmogonic eras. Thus, they name all the units of time, a significant point of departure from Old World chronological practices (an aspect that will be discussed in the next section of the paper). But the signs and numbers also underline an aspect that is fundamental for the understanding of the *tônalpôwalli*. The count is linked to the written register. Colonial sources indicate that if the codices were lost, the system would be lost, too. Accordingly, the co-dependence between counting and writing/drawing/reading is described and especially underlined in the story of the arrival of the Mexica and other groups to the Basin of Mexico (Sahagún 1979: 3: 144r; 2002: 3: 974). This co-dependence is supported by the graphic representations of the day, showed above (see Figure 7.3). So, to understand some of the basic Nahua chronological principles of operation, we must delve into its nature by analysing its graphic register.

Distinguishing Two Types of 'days'

In Nahuatl, 'day' is a word related to two concepts: *tônalli* and *ilwitl*. Why use different words to refer to what we might assume to be a basic and universal temporal category? The reason for making this distinction is not immediately clear, but as Thouvenot (2019) notes, it might indicate two different spheres or "worlds" in which a day might participate. I will follow part of his argument.

The term *ilwitl* does not have a univocal translation into European languages. Thouvenot (2015, 2019) has analysed the term by following its use in both Colonial sources written in Nahuatl with Latin characters, and Prehispanic and Colonial sources produced in the *tlahk^{w}îlôhlli* tradition, that is, written with glyphs. In sum, Thouvenot synthetises the main function of the word as follows: *Ilwitl* has different meanings, mainly related to 'day', 'festivity', and '*veintena*'. It seems to correspond to the world of social time, daily life and festivity or celebration, and it is deeply linked to the number '20' (Thouvenot 2019). One of its basic characteristics, which permits us to distinguish its sphere of action from that of the *tônalli* is the aforementioned quality of the temporal phenomena, noted by Dehouve. The term *ilwitl* refers to a chronological unit that cannot be pluralized because it is not an animated entity (Thouvenot 2019). Its semantic domain among the temporal sphere assumes that it does not need a numeral classifier when counted (such as *tetl*), although other particles such as verbalizers and qualifiers, can be added to the numbers that refer the amount of days in a sentence, in order to attribute rhythm, duration, position, etc. (Thouvenot 2015: 97-99). Here *ilwitl* is used to refer and count amounts of days as temporal units, which following Nahua arithmetical practices are usually grouped in standardised modules (e.g. 5 or 20). As we might expect, most of the groups of days involve the number '20', its multiples and divisions, although the system allows the counting of any range of units.[3]

The glyph for *ilwitl* has two variants. The first is an object that seems to be a circular jewel (see Figure 7.3) divided into four colours with four additional circular elements attached. Speculating about the possible meaning of this glyph and aiming to reconstruct its figurative association, I suggest the form is a representation of precious material, like turquoise or jade. Thouvenot (2015:103 n. 34) points in this direction as well. The association between the two semantic spheres, *ilwitl* as related to precious material and *ilwitl* as 'day', creates an interesting association that is also found in the glyph for 'year' (the turquoise *xiwitl*). The second variant of the *ilwitl* glyph is a double word scroll (**ILWI**), which might refer to the verb *ilwia* 'to say' (see

[3] Thouvenot distinguishes between temporal durations that are most commonly documented in colonial written sources: 20; 20/5; 20×4; 20/4; 20/20; 20/4; 20/2; 20×2. See also the excellent study of Dehouve (2011), who analyses the complexity behind the way in which the Nahua used to count days and intervals in their everyday and ritual life.

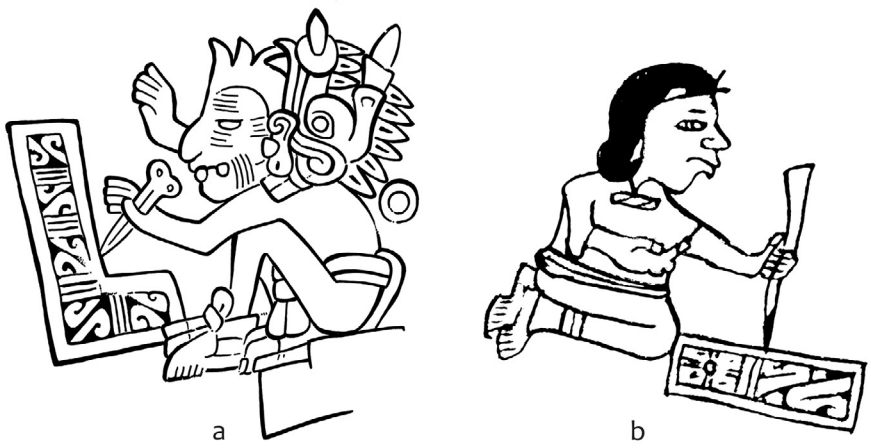

Figure 7.4: Variations for the glyph **ILWI** (*ilwitl*).
a) the glyph in the version of "double scroll" is engraved by an old man identified as Cipactonal, in the petroglyph known as the Piedra de Coatlan (drawing by Christophe Helmke after Brotherston 2011: Fig. 2.7a); **b)** A female *tlahkʷîlôh* draws *ilwitl* signs in a codex (*Codex Telleriano-Remensis*, fol. 30r) (drawing by Christophe Helmke).

Helmke and Nielsen, this volume). This glyph appears in two contexts: to record the word *ilwitl* ('day' or 'veintena', following Thouvenot 2015: 105-106) and to show the act of writing in codices. The first example is found in sources such as the *Codex Xolotl*, the second case appears in the *Codex Telleriano-Remensis* as well as on the Piedra de Coatlan (see Figure 7.4a-b).

This version of *ilwitl* is found in some compositions to indicate that it is an element in an iconographic scene that represents a codex. It is not clear if this glyph is meant to designate a specific, codical genre, or if it refers to a more general category for codices, such as *amoxtli*. However, there are some examples in Prehispanic codices of depictions of a special genre, the type known as *tônalâmatl*. These objects are depicted in the codices of the Borgia group as white strips of paper or hide, inscribed with the signs of the *tônalli* (Figure 7.5). These are images that show the glyphic contents of the codex, contrasting with the more stylistic convention for depicting a codex with the double scroll *ilwitl*-logogram.

The term *tônalâmatl* refers to divinatory almanacs and builds on the term *tônalli,* the second word used to refer to 'day' in Nahuatl. Although this word is, too, is usually translated as 'day', it encompasses a wide range of meanings and thereby requires some scrutiny. First, linguistically, *tônalli* can be pluralised as *tonaltin*, and therefore it can be suggested that it was conceived by the Nahua as an animated entity. Second, in terms of meaning, *tônalli* is a complex word which embraces a group of semantic values, most of them related to 'heat' and 'radiance', but it also covers concepts such as 'bright, shining, hot', etc. The quality described by the word *tônalli* is one wherein all kinds of beings and creatures can receive, project, carry, and keep such a quality. For example, the sun received the name of Tonatiuh, which could be translated as 'the one who goes shining/in radiance/*tona*-ing'.[4] However, the sun was not the only entity that could carry *tônalli.* Motolinía notes that there were other sources that were able to keep and project this radiance, such as the Moon (*mêtstônalli*), or the stars (*sîtlaltônalli*) (Motolinía 1996: 183). Another source confirms that the moon shines in the nocturnal sky, and during the phase of the full moon it can shine a red light, that was identified as its *tônalli* (Dibble and Anderson 1953: 3). The *tônalli* also affected non-astronomical phenomena, like the wind (*tonalehecatl*), maize (*tônalelotl*), and the seasons (*tônalco*) (Molina 2004: 149r-149v). The *tônalli* also accumulated in the body of living creatures like humans, who have a 'soul entity' called *tona*, which was nestled at the top of the head.

The term *tônalli* has its origin in the verb *tona* ('to heat', 'to radiate', etc.). Therefore, the radiance of the sun and other entities that emit heat and light was conceived by the Nahua as animated entities. The source of *tônalli* was made manifest by the 260 days of the *tônalpôwalli* ('the count of the *tônalli*'). The total computations are the result of the combination of 13 numerals and the 20 day signs (13×20=260) and it is the basis of the Nahua chronological system. The names obtained by the combination of a specific numeral and sign were applied not only to days but also to years and other cycles of time, such as cosmological eras. This information is essential to understanding the basis of the chronological conception, because in contrast to

[4] A complete study of the *tona* phenomenon is offered by León Vega in his dissertation (2013).

Figure 7.5: A deer displays a *tônalâmatl* spread over its entire body and a codex across its lap (*Codex Borgia*, p. 53).

the Maya and other groups who had different measures of linear time and assigned different values and names to a variety of temporal units, the Nahua only used one count to name their temporal units, the *tônalpôwalli*.

I have not found a logogram for *tônalli* in the graphic corpus. It seems that there is no representation for this term, as is the case with *ilwitl* (see Figure 7.4a-b). Nevertheless, the Nahua graphic system inherited the ancient tradition of writing the complete names of each date (day/year) using the combination of numeral and day sign, the basis of the *tônalpôwalli* / *xiwpôwalli* system. Both tallies use the same basic units: 13 numerals combined with 20 signs (Figure 7.6). In regards to the dates of the *tônalli*, the first element written is the numerical coefficient of the day, which spans from 1 to 13. The second component is the day sign, taken from a list of 20 named days. Both were conceived as animated entities under the influence of a deity or other supernatural entity (*Codex Borgia*, p. 10-14, 71). Every date had a position in the system of 260 units, but could also be located in relation to other modules of time. For example, the numeral of a date gives its position in the *trecena*, while the sign of the date revealed the place it occupies in the *veintena*. Integrating both series it was possible to locate a date within a solar year, and integrating the three referents within the account of years, it was possible to make

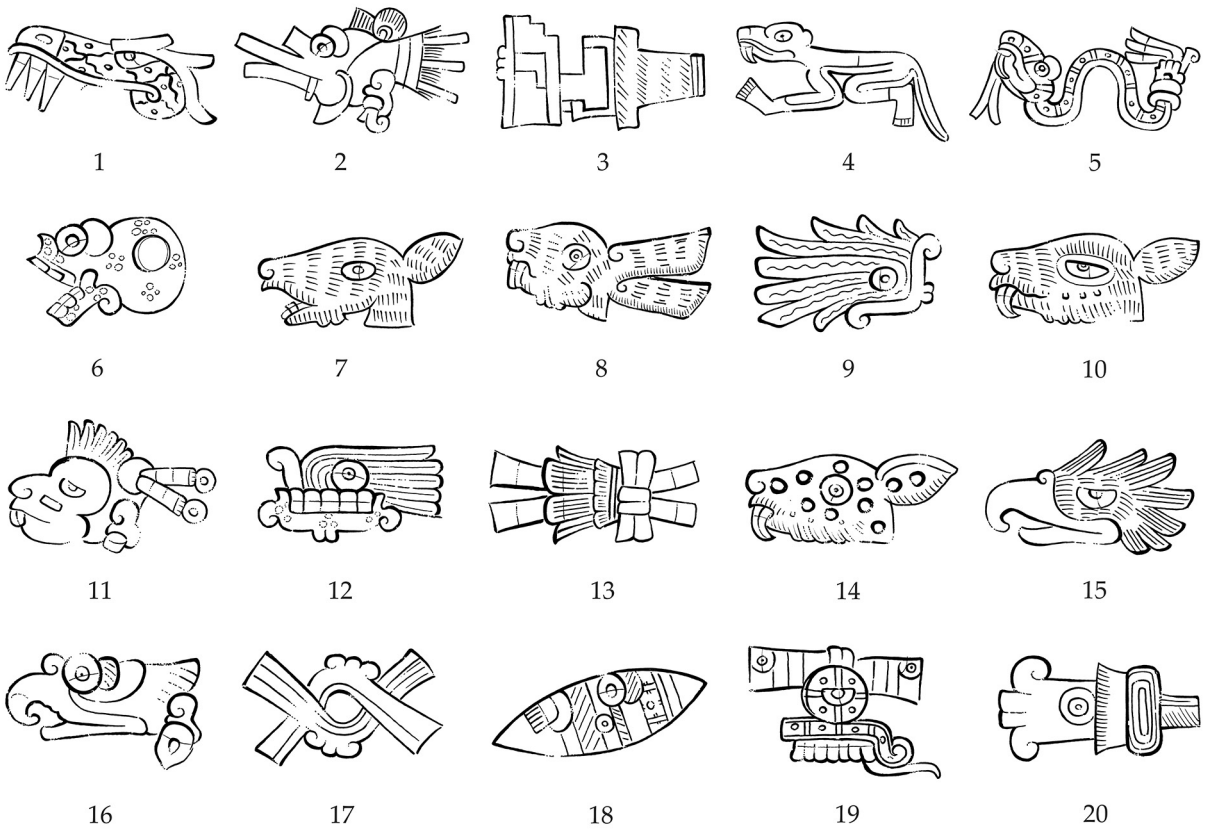

Figure 7.6: The day signs of the *tônalpôwalli* as represented in the *Codex Borgia* (drawings by Christophe Helmke).

calculations of larger temporal intervals. The position of a date into the whole system (*trecena-veintena*), was as intricate as the numbers and months which interact in our calendar: 3 March, or 20 April. Nevertheless, the system is hard to follow for the uninitiated, as it happens with any calendrical system that one is unaccustomed to. The secret to understanding the relations is based in regular practice.

With the *tônalpôwalli* it is easy to locate the position of a day within the year, because annually it moved forward by a factor of 1 (with regards to the numerical coefficient) and the name of the day shunted by 5, creating a regular dynamic that ruled the account of the years (*xiwpôwalli*). The count lasted only 52 cycles, because only four of the 20 signs were available to name the first day of a year (20 / 5 = 4). These four signs combined with all the 13 numbers created the 52 possible combinations, used to name years, in the count. With the completion of this half-century, its cycle was renewed. The graphic representation of the year was also divided in two types, the logogram for year is a turquoise jewel (*xiwitl*), but the count of years reproduced the same logic as the *tônalpôwalli*: the combination of numeral and sign. In order to distinguish the days from the years, the years were written inside a quadrangular frame that was commonly painted in blue – reinforcing the turquoise quality, to cue the word *xiwitl*.

The 52-year duration of the *xiwpôwalli* is close to the length of a human life. If we remember that the length of a pregnancy is almost equivalent to the duration of a *tônalpôwalli* (Tedlock 1982), we can recognize the intention to create a chronological system that was clearly anthropometric. It is possible to hypothesize that human life was the reference for time measuring, but also for historical configuration, because the experiences of a person would be limited to the realm of the *xiwpôwalli*, which lasted as long as a personal memory. This logic reveals one of the most important differences between Nahua temporal conceptions and Christian universal time. The arguments presented above will help contextualize the deep changes that affected indigenous time when translated into the format of the colonial sources.

Explaining time: The transformation of the Nahua count to the Christian Calendar

The data used to support the interpretation offered above, is based on primary sources, which included traditional Nahua language, writing, and images.

These elements were embedded in what I might call a Nahua chronological graphic culture. Now I will give a summary of the description of Nahua time offered not by the Nahua themselves, but by the authors of Colonial chronicles.

According to the chronicles, Mexican time was divided into two systems. The first was the calendar proper, of 365 days, called *xiwitl*. Its organization was quite simple: 18 cycles of 20 days, called *veintenas*, equals 360 days, plus an addition of 5 supplementary days, called *nêmontemi*. In this explanation, the *veintenas* were identified as the indigenous 'months'. This cycle was early on paired with the Christian calendar of fixed feasts and ceremonies (Sahagún 2002: I: 129-296). Thus, one of the main efforts of the authors interested in describing the Mexican calendar was to identify an accurate correlation between Nahua and Julian dates. That most of the manuscripts that offer correlations usually present corrections and substitutions in the dates reveals the difficulty involved in correlating Christian and Nahua chronologies.

The second count reported in Colonial sources is the *tônalpôwalli*. The friars made a great effort to define what kind of system this was, but they could not agree. Motolinía identified the count as an ancient calendar that was wholly compatible with the chronological systems of other ancient civilizations. In fact, he reports that the duration of the cycle was useful to count the cycles of Venus (Motolinía 1996: 162-163, 175-179). In contrast, Sahagún argued that the *tônalpôwalli* was a judiciary astrological system that reflected no natural organization and therefore could not be identified as a proper calendar.[5] By authors such as Sahagún, the 260-day cycle was presented as a mobile "artificial" calendar which reproduced a chaotic gap of 105 days between the ritual and solar calendars. Therefore, it was deemed unreliable. Both descriptions are still in use among scholars, who usually seek an explanation for the *tônalpôwalli* in a given natural cycle, or alternatively, deny its function as a complete chronological system, identifying the count as a mantic repertoire that is associated with "true time", to be understood as Western annual time. As I hope to have shown above, the *tônalpôwalli* was the only system in use among the Nahua to count, name and experience time at different scales (*trecenas*, *veintenas*, years, Venus cycles, anthropomorphic cycles, cosmogonic suns, etc.). Therefore, the distinction between two autonomous counts, as referred by Colonial sources, is questionable.

After analysing the main descriptions typically offered in the chronicles, it is time to compare these descriptions to the information derived from *tlahkʷîlôhlli* tradition.

[5] This topic is analysed in the work of Díaz (2013). The study offers more examples to support the argument of this paper.

In the previous section of this paper I described the way in which the register of the *tônalpôwalli* worked by combining a numeral and a sign to write a date (as was also the case with years). This type of register is observed in all the Prehispanic Nahua and Mixtec sources. The only changes to this way of recording the dates that we observe in the colonial manuscripts, consist in the translation of Nahua numbers and positions (that is, the native chronological arithmetic) into Western traditional notation as either Roman or Arabic numbers. The 20 signs were copied and reproduced without significant alterations. The use of tables and *rotae* (wheel charts) imported from medieval literature to show the combinations of the dates of the *tônalpôwalli* and the *xiwpôwalli* was an effective strategy to translate the alien Nahua components in a recognizable visual arrangement familiar to Christian readers (see Clemmensen, this volume). These strategies succeeded in simplifying the complexity of the tallying of time, breaking the whole system up into more recognisable modules: the signs of *tônalpôwalli,* the months of the year, and the 52 years of the *xiwpôwalli*. It is important to say that most of the visual devices offered in colonial sources are new images and diagrams produced for this type of translation of the Nahua system into European formats (Figure 7.7). The exception can be found in those colonial manuscripts that reproduce complete sections of the Prehispanic *tônalâmatl*, such as the display of the lords of the 20 *trecenas* found in some illustrated documents (see the *Codex Telleriano-Remensis*, and *Codex Vaticanus A*).

In the previous section of this chapter, I introduced the different repertories used by the Nahua to represent temporal units, but I intentionally left the *veintenas* and its cycle out of the discussion. This responds to a basic argument. The *veintenas* had their own graphic repertoire, but it did not operate as a count of temporal units (unlike the *tônalpôwalli* which represented the true time for the Nahua) but as a list of names of feasts. Therefore, these components are closer to toponyms and personal names found in Nahua writing than to calendrical arithmetic (the autonomy of this sphere from "worldly" arithmetic was underlined in the first part of this paper). To understand the importance of this argument we need to review the different repertories used for the *veintenas* and the *xiwitl* before and after contact. In this case, we need to reverse the chronology, beginning the analysis in the Colonial manuscripts and then trying to find the Prehispanic model.

The sources that include images of the *veintenas* used three main visual repertories to articulate the months in the year: A figurative cycle of deities, a cycle of feasts, and a hieroglyphic cycle (see Table 1). In all the cases, the authors identified this period as the annual Mexican calendar, and therefore offered a correlation

Figure 7.7: Calendar No. 4 of Mariano Echeverría y Veytia (copied by Carlos de Singüenza).
The centre of the wheel depicts the Mexica Year-bearers ('1Reed', '2 Flint', '3 House', and '4 Rabbit'). The inner wheel shows the 18 glyphs of the *veintenas*. The external circle shows the count of the 52 years (after Echeverría y Veytia 1907: plate 4).

between the positions of the feasts or months, and the dates of initially Julian, and eventually Gregorian time. This was one of their main objectives.

The cycle of deities offers a view of 18 deities, who were the regents of each *veintena* or month (see *Codex Vaticanus A* and *Codex Telleriano-Remensis*) (Figure 7.8). Having analysed the formal configuration of the characters in the cycle, it is evident that the scribes did not follow an original figurative model in contrast to the deities represented for each *trecena* in the *tônalpôwalli*. In the latter case, the gods of the *trecenas* repeat a set of gestures that we can identify in most of the Prehispanic *tônalâmatl*. This is not the case with the *veintenas* of the year. In this repertoire, the scribes are more focused on reproducing iconographic elements that help to identify each deity, than in reproducing gestures and other details in the composition that indicate the use of a traditional formal language. If we turn to the Old World literary tradition, we will find that one of the main figurative cycles of the Western calendars was the cycle of the gods because it was inherited from the Romans and Greeks. Therefore, it was logical to seek an analogy with ancient Mexican practices (see Motolinía

Table 7.1: Sources analysed for tracing the transformation of the repertoire of the *veintenas*.

	Source	Deities*		Feasts/Rites		Glyphs	
		Anthropomorphic	Others	Rituals	Agricultural iconography	Glyphs	In iconographic context
1	**Prehispanic sources**						
1	*Xiwtlalpilli* (Museo Nacional de Antropología)					x	
2	Pictorial codices that reproduce the figurative cycle of the *veintenas*						
2.1	*Codex Borbonicus*	x		x		x	x
2.2	The Boban Calendar Wheel					x	
2.3	Durán's calendar				x	x	x
2.4-2.10	Seven wheels or calendars of Boturini					x	
3	**Calendars in the Tovar-group**						
3.1	Tovar calendar	x		x			x
3.2	Calendar in *Cantares Mexicanos*	x		x			x
4	**Magliabechiano-group**						
4.1	*Codex Tudela*	x		x		x	x
4.2	*Codex Magliabechiano*	x		x		x	x
4.3	*Codex Ixtlilxochitl*	x		x		x	x
5	Ríos-group						
5.1	*Codex Telleriano-Remensis*	**x**	**x****			**x**	**x**
5.2	*Codex Vaticanus A*	x	x**			x	x
6	**Sahagún-group**						
6.1	*Primeros memoriales*			x			x
6.2	*Florentine Codex*	x		x			x
7	**Colonial codices that include graphic references to the veintenas**						
7.1	*Codex Mendoza*					x	
7.2	*Matrícula de Tributos*					x	
7.3	*Codex Mexicanus*					x	
7.4	*Codex Tlaquitenango*					x	
7.5	*Codex Humboldt 1*					x	
7.6	*Codex Azoyu 2*					x	
8	**Other sources**						
8.1	Stone of Cuilapan (ñudsawi-region)					x	
8.2	Cave painting (hñâhñû)						x***

* Deities represented allegorically. Deities represented as participants in rituals is registered under Feasts/rites.
** These deities are actual glyphs on which masks have been superposed in order to convert them into representations of deities for which reason I include them in both categories.
*** Only Xocotlwetsi represented.

Figure 7.8: The *xiwitl* represented as a calendar of 18 deities.
The *veintena* Weitêk^{w}ilwitl (*Codex Telleriano-Remensis*, fol. 1v © Bibliothèque Nationale de France). See the correction made to the dates in the Julian calendar at the top of the page.

1996: 162-163, 175-179). In these cycles, each month was associated with a deity. The formal argument is not enough to support the hypothesis that the repertoire of Mexican deities was a colonial invention, but if there had been an actual Prehispanic repertoire for the *veintenas*, it stands to reason that all the colonial sources would have reproduced it, as was the case with the *tônalpôwalli* divided in *trecenas*.

The same argument applies to the cycle of feasts. There is no homogeneity in the repertoires used by the scribes of the colonial sources. Most of the manuscripts show ritual scenes that took place during the *veintenas*. Once again, if there had been a Prehispanic model of the cycle it would have been reproduced in the colonial sources. Instead, each author/scribe/*tlahk^{w}îlôh* seems to have been immersed in a creative process of illustrating each *veintena* by inventing images that condensed relevant information about it (see Figure 7.9). This operation is analogous to the "ethnographic" descriptions in the chronicles, illustrating the coherence between native scribes and colonial authors who were both looking to produce an accurate description of the feasts of the *veintenas*. The *Codex Borbonicus* is a central piece of this puzzle because it follows the *tlahk^{w}îlôhlli* tradition. Elsewhere, I offer arguments to support that this manuscript was produced in the 16th century for a Western readership (Díaz 2020: 373-383) but let us briefly entertain the possibility that it is an original Prehispanic codex. If this were the case, we could view the representation of feasts reproduced on pages 21-35 as a Prehispanic model for representing the *veintenas*; a model that we could expect other scribes of colonial sources to follow (not because they had contact with the *Borbonicus*, but because they would have worked within the same well-established tradition of *veintena* representation as that of *Borbonicus*). Yet, no colonial scribes represented the *veintenas* in a way similar to that of *Borbonicus*. If we take the *Borbonicus* as a colonial source, the same problem arises. If the *tlahk^{w}îlôhkeh* of this source were copying a traditional *amoxtli*, why is there no coherent sequence between the reproductions of the cycles of the *veintenas* among this and other colonial sources? My hypothesis is that there was no Prehispanic figurative cycle for this "calendar". If we assume that *trecenas* and *veintenas* were included in the *tônalpôwalli*, then we can follow the days of the *veintenas* in the *tônalâmatl* and no autonomous calendar for tracking the *veintenas* would have been required. What we still need to discuss is the purpose of the graphic registers of the feasts.

The 18 feasts celebrated during the *veintenas* did have a graphic representation, but this was not a figurative, or iconographic, cycle, it consisted of a written repertoire. Most of the colonial sources that offer a figurative representation of the Mexican calendar include a specific set of elements that is seen playing different roles into the composition. This set of elements involves hieroglyphs and they follow the principles of operation of Nahua written culture (Figure 7.10). In some cases, the glyphs appear as iconographic elements integrated

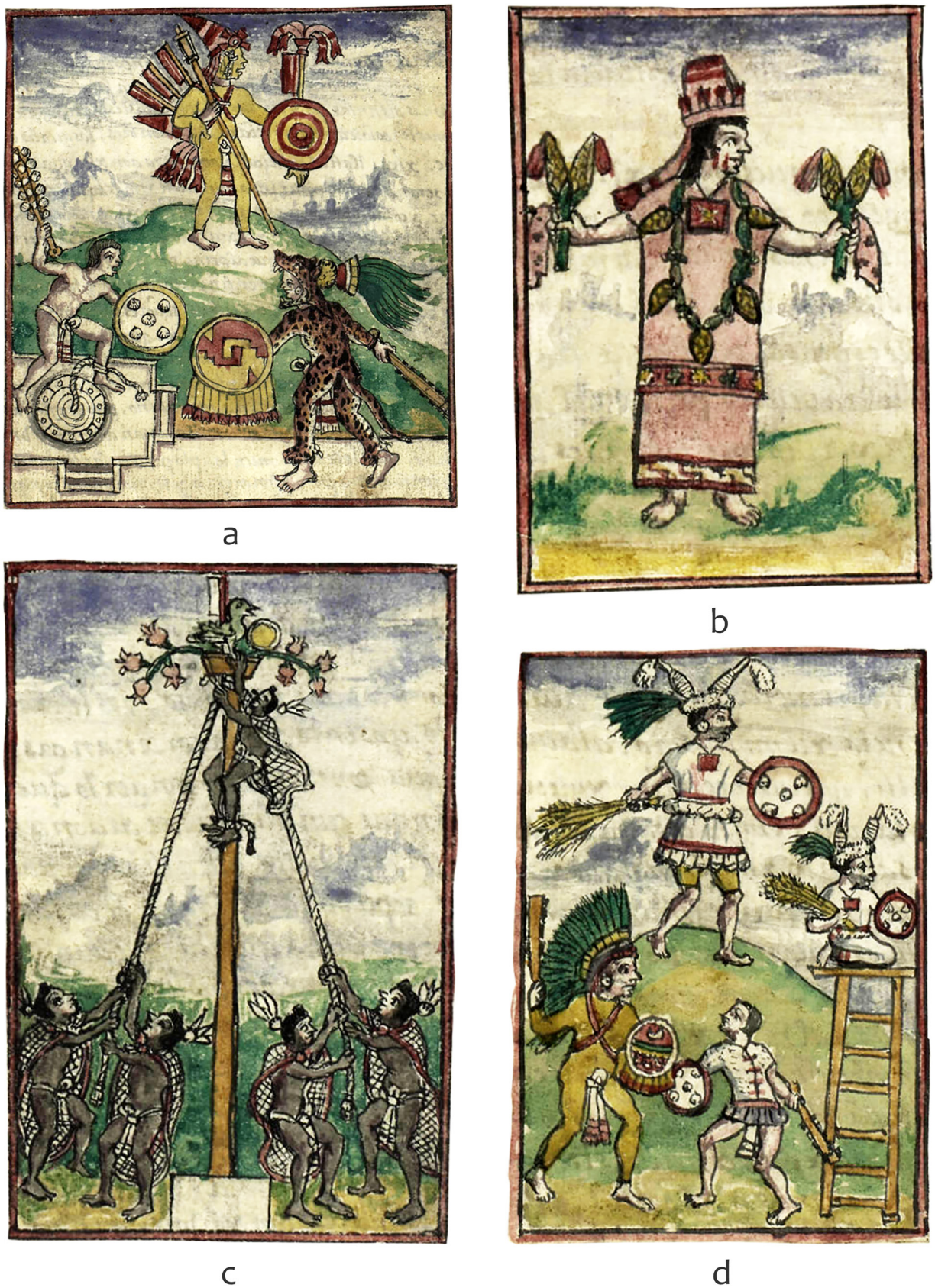

Figure 7.9: The *xiwitl* represented as a calendar of 18 events linked to the festivities of the *veintenas*.
Details of the *Historia de las Indias de Nueva España e islas de tierra firme* by Diego Durán (1579: fol. 266v, 283r, 276r and 286r © Biblioteca Nacional de España / Biblioteca Digital Hispánica).

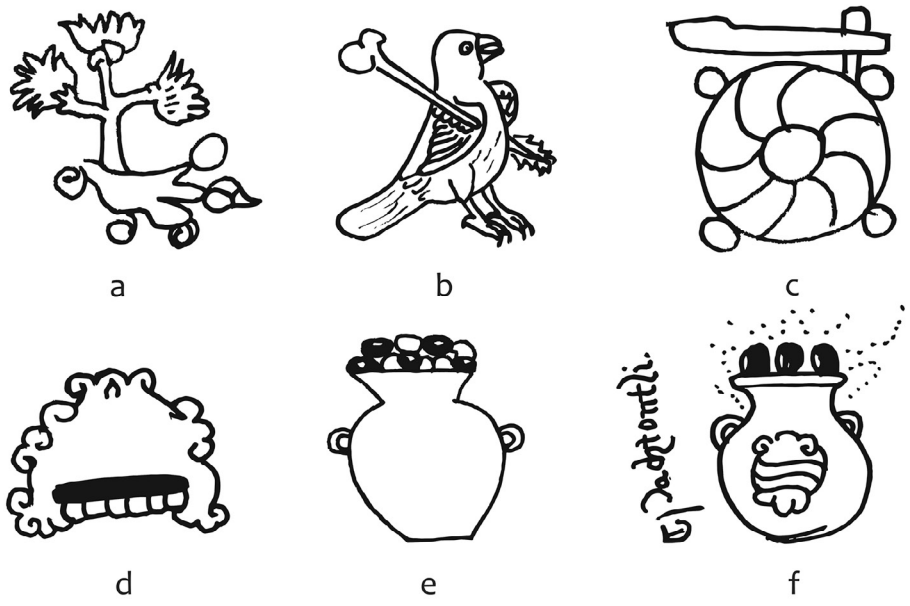

Figure 7.10: A selection of named feasts recorded in Nahua writing (drawings by Ana Díaz). **a) K^{w}AW-a,** *k^{w}aw[itlew]a* 'the tree is raised/planted' (*Codex Vaticanus A*, fol. 87r.); **b) [WEI] TO-so** *Wei-tôsostli*, 'great vigil' (*Tovar Calendar*, pl. 5.); **c) TEK^{w}-ILWI**, *teek^{w}ilwi[tôntli]* 'little feast of the lords' (Calendar no. 4 in Echeverría y Veytia 1907); **d) TEPE,** *Tepêilwitl* 'feast of the mountains' (*Primeros Memoriales*, f. 252r); **e) ETSA/ESA** *etsa[lk^{w}alistli]*, 'stew of beans and maize [called *etsalli*]' (*Codex Borbonicus*, p. 26); **f) te-e-E-ko,** *Teôtleko* 'ascent of the *teôtl*' (*Boban Calendar Wheel*).

into the whole figurative composition, but in other cases they are depicted as autonomous elements of writing. Some authors have argued that these glyphs may have been colonial innovations influenced by astronomical Western iconography (Kubler and Gibson 1951; Brown 1977: 347-348). I agree with this hypothesis in terms of the semantic transformation suffered by the original repertoire. The Nahua may have found a partial analogy with the Zodiac of Christian calendar because this figurative cycle was associated with the months of the year in some liturgical calendars (Diaz 2011; 2018: 370-379) (Figure 7.11). However, the Nahua repertoire is the only graphic pattern used by the scribes of the *veintenas* that agrees with the *tlahk^{w}îlôhlli* tradition (it follows all the rules of Nahuatl writing), it also appears in most of the sources, mixed with the representation of deities and the scenes of festivities of the two figurative cycles. Finally, this is the only repertoire that appears in both Prehispanic and colonial sources.

Paradoxically, these glyphs do not appear in contexts related to the count of time, at least not in terms of the logic of the *tônalpôwalli* count. The first object is a Mexica monument that commemorates a New Fire ceremony. The text narrates that the ceremony took place on the year '1-Acatl', during the *veintena* Panquetzaliztli (Figure 7.12). The event was preceded by a character whose name cannot be properly deciphered, but if the glyph represents an office or title, that could be read as Cihuacoatl. Another example is found in the *Matrícula de Tributos* (a colonial document that follows the *tlahk^{w}îlôhlli* visual and writing traditions) where the *tlahk^{w}îlôh* offers the dates when specific products of tribute were collected.

In the *xiwmolpilli*-monument, the glyph for Panquetzaliztli provides important information about the New Fire ceremony, but it does not enable us identify the precise day within the *veintena*. Strangely, the sculpture does not offer the day of the *tônalpôwalli* when the feast was completed, therefore the main aim of the object was not to date the event with precision, but to provide other types of information that supported the overall aim with the stone monument. Since the text commemorates an event, we move into the historic genre. In the second case, that of the *Matrícula de Tributos*, the glyphs of the *veintenas* work similarly to the *ilwitl* and within the common arithmetic, letting the reader calculate the periods that govern the collection of tribute, giving no information about the exact days when these were supplied. The specific dates may have been calculated by means of the *tônalpôwalli* to determine the best days for the tributary transactions.

The distinction between *ilwitl* and *tônalli*, between common and chronological arithmetic, becomes

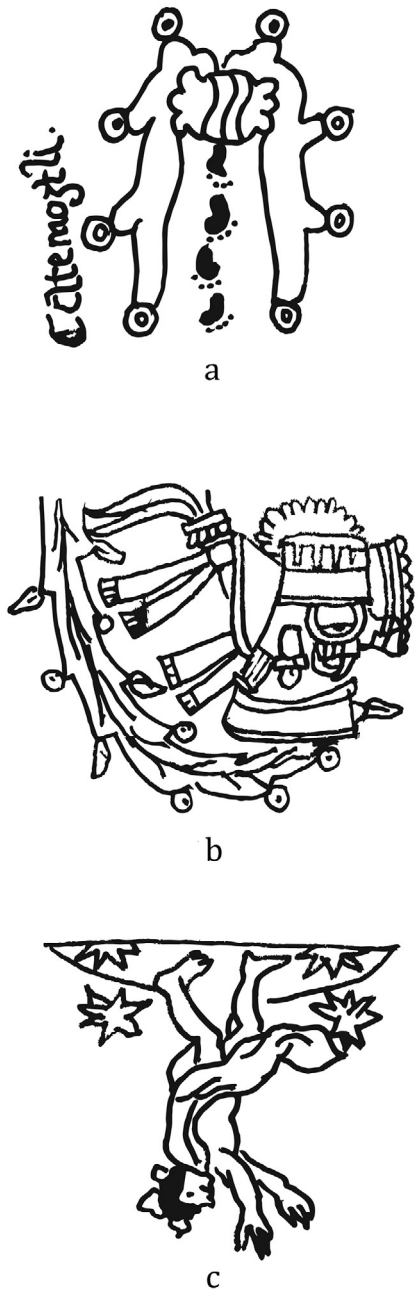

Figure 7.11: Transformation of the glyph Âtemôstli. **a)** Tetzcocan writing tradition: **a-te-TEMO**, *a[a]temo[ostli]* (Boban Calendar Wheel); **b)** Iconization of the segment Âtemôstli (**a-TEMO**), rendered as a stream of water, personified by Tlaloc, and deifying the name (*Codex Telleriano-Remensis*, fol. 5v); **c)** Iconisation and iconographic resignification of the text (**a-TEMO**), following the typical archetypes of European imagery for Classic gods (Durán 1579: fol. 342r).

relevant because we can identify both operations in the graphic sources. The *tônalpôwalli* is a system that manages time and dates, but the *veintenas* as *ilwitl,* were feasts arranged according to the dates of the *tônalpôwalli*. These were not proper chronological or calendrical elements in and of themselves, unlike the *tônalli*. The association of the *veintenas* with the solar year was not the essential aim, because these were primarily linked to the *tônalpôwalli*, which served to place these in chronological order. The *tônalpôwalli*-system as a whole organised days, years, and feasts of all kind, the economical, the daily life, and the local histories. The *veintenas* were feasts that articulated complex relations between different spheres, among which the realm of time (the *tônalli*) was included. However, this has remained invisible due to the segmentation produced by the colonial agents, who tried to eradicate and substitute the native chronology with the Christian calendar.

To close this paper, I want to offer another element in support of the hypothesis that the yearly calendar was a colonial invention. After analysing the ways in which different sources depicted the *nêmontemi*, I conclude that there was no Prehispanic repertoire to represent this set of days, because all the representations of this cycle are unique, and these appear only in colonial sources. This observation is important. It does not mean that the Nahua invented the *nêmontemi* in the colonial period. Rather, it means that that this cycle was not independent of the *tônalpôwalli,* even though this is how it usually appears in the written colonial sources. All the days of the *xiwpôwalli* (18,980 days) must have been counted and represented by the same graphic register: the *tônalpôwalli*.

The *tônalpôwalli* was the language, the nature, the shape, the arithmetic of time. It was a chronological configuration that had no reference in cosmological and chronological traditions of the Old World. For this reason, it could not be properly understood, or explained, by the Christians of the 16th century. The Europeans lacked the tools for understanding anthropological and cultural differences that we possess today. However, despite modern insights, our understanding of *tônalpôwalli* remains partial as we work with only a few pieces left over from a huge, now incomplete, puzzle.

Figure 7.12: Monument that commemorates a *xiwmolpilli* on the year 1-Âkatl, *Pânketsalistli*. Postclassic (photograph by Christophe Helmke).

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Resúmenes

Capítulo 1:
El sistema de escritura de Teotihuacán. Una síntesis

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Durante décadas, los investigadores han debatido sobre la existencia de un sistema de escritura teotihuacano. Hoy en día la evidencia en favor de su existencia se ha vuelto preponderante, aunque hasta la fecha el sistema haya resistido todo intento de desciframiento. Entre los elementos que siguen obstaculizando el desciframiento destaca sin duda nuestra ignorancia sobre la(s) lengua(s) hablada(s) en Teotihuacán durante el periodo clásico, una forma arcaica de náhuatl o alguna lengua otomangueana siendo las posibilidades mas plausibles. Los teotihuacanos emplearon un sistema logosilábico, análogo a otros sistemas mesoamericanos conocidos, aunque su nivel de fonografía sigue siendo un tema escasamente entendido. En cuanto al sistema de notación calendárica, sabemos que los teotihuacanos emplearon tanto la cuenta de 260 días como un calendario solar basado en el llamado Grupo III de cargadores del año ('casa', 'conejo', 'caña', y 'cuchillo').

Si bien no se haya logrado descifrar la escritura teotihuacana, importantes logros se han obtenido a través de "desciframientos semánticos", en donde el posible significado de logogramas se reconoce gracias a su parecido formal con aquellos empleados en sistemas análogos como el que se empleó en el periodo posclásico tardío y colonial para registrar la escritura náhuatl. De esta manera ha sido posible reconocer la existencia de varios topónimos, nombres de edificios, títulos y antropónimos. La aparente escasa presencia de verbos y el recurrente uso de glifos en asociación con imaginería de carácter no-escriturario indica que el sistema teotihuacano era un sistema prevalentemente onomatográfico, empleado en estrecha relación con otros sistemas de comunicación visual. Por lo tanto, el análisis de las complejas relaciones que los textos entretienen con las imágenes es un tema clave para entender la escritura como práctica social y su función en el complejo panorama sociopolítico de la antigua urbe del México central.

No obstante, las muchas preguntas todavía abiertas, lo que se puede afirmar con seguridad es que las prácticas escriturarias desarrolladas en Teotihuacán constituyeron el punto de origen de la larga genealogía de sistemas escriturarios empleados por los grupos indígenas del centro de México hasta avanzada la época colonial.

Capítulo 2:
La escritura del oeste de Oaxaca.
El estilo Ñuiñe en el contexto regional

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El sistema de escritura usado en la región Mixteca, conocido como Ñuiñe, abarcó una temporalidad de casi 500 años de uso–con evidencia registrada en monumentos grabados, objetos portátiles, pintura mural y esculturas cerámicas–, en una extensa región ubicada en el oeste de Oaxaca y secciones vecinas de los actuales estados de Guerrero y Puebla. Buscamos el origen del sistema, encontrando sus raíces en el periodo Preclásico; no obstante, el mayor número de registros pertenece al periodo Clásico y Clásico Tardío.

Damos una lista de los glifos calendáricos registrados y proponemos una secuencia basada en la comparación de otros sistemas calendáricos conocidos en Oaxaca, especialmente el zapoteco. También proponemos una secuencia de portadores del año, que comparten dos sistemas de portadores, siendo el más antiguo semejante al usado en Monte Albán, mientras que el más reciente comparte los portadores del centro de México.

Enumeramos algunos de los temas que tratan los monumentos, por ejemplo aquellos que se refieren a la entronización de los gobernantes, así como fechas especiales del calendario y que fueron conmemoradas en monumentos de piedra que fueron usados como esquineros monolíticos; estas fechas coinciden con nombres calendáricos de deidades mixtecas que aún eran veneradas en el periodo Posclásico.

Capítulo 3:
El sistema de escritura epiclásica en el centro de México

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La escritura jeroglífica que emplearon las culturas del periodo Epiclásico en el centro de México constituye uno de los sistemas de escritura menos conocidos de la Mesoamérica precolombina. Indudablemente, el desconocimiento se debe a que este sistema de escritura permanece sin desciframiento hasta el día de hoy, a causa de la cantidad limitada de textos que constituyen el corpus conocido de este sistema de escritura. Es precisamente debido a que está restringido al Epiclásico (c. 650–1000 d.C.)—un periodo transicional relativamente corto, pero de suma importancia entre la caída de los estados urbanos centralizados del Clásico temprano (c. 200–650 d.C.) y la subida de los estados del Posclásico (c. 1000–1521)—que la extensión del corpus Epiclásico es tan limitado. Al igual que el Epiclásico mismo, la escritura de este periodo es una fase intermedia del sistema que se empleó en el altiplano central de México por más de un milenio. En este ámbito, la escritura epiclásica deriva en gran parte del sistema de escritura empleado en Teotihuacán durante el Clásico Temprano y—aunque hay indicios de descontinuación—también contribuyó al desarrollo, normas e inventario de signos del sistema de escritura empleada por los nahuas del Posclásico.

Algo notable fueron las primeras documentaciones científicas de textos epiclásicos realizadas hace más de dos siglos, tal y como puede apreciarse en las obras del naturalista y explorador prusiano Alexander von Humboldt (1810: 37-41, pl. IX) y del historiador mexicano Antonio Peñafiel (1890). Sin embargo, el reconocimiento de la escritura del Epiclásico como un sistema de escritura intrínsecamente coherente tuvo lugar relativamente hace poco tiempo y puede atribuirse a los trabajos valiosos y pioneros del eminente investigador mexicano Alfonso Caso (1962), y de la historiadora del arte estadounidense Janet Berlo (1989). Hasta este momento no se ha compilado un catálogo de signos y aún es necesario establecer las lenguas candidatas. Por lo tanto, debe aclararse que el estudio de la escritura del Epiclásico aún está en su infancia y el presente capítulo proporciona solamente una síntesis del actual estado de la cuestión, resaltando lagunas, progresos recientes y expectativas futuras.

Capítulo 4:
¿Qué ocurre con TLATOANI y *tlăhtŏhkĕh*? Tres clases de signos y dos tipos de deletreos en la escritura jeroglífica náhuatl

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La escritura jeroglífica náhuatl puede describirse como un sistema logosilábico empleado siempre en combinación con la iconografía, de tal manera que los deletreos a pie de figura especifican antropónimos, topónimos y fechas correspondientes, dado que éstos no pueden representarse por medio del dibujo. En el Códice en Cruz se encuentran algunas estructuras sintácticas recurrentes; éstas implican que lo que solíamos considerar como una combinación de texto e imagen, son, en cambio, textos en sentido estricto, colocados para ser leídos en voz alta y de manera coherente. Dichos textos sugieren, por ejemplo, que la imagen del "trono con respaldo" es un signo no reconocido de **TLATOANI** 'rey, gobernador'. El valor de lectura para éste se sostiene en algunos deletreos de nombres personales y varios ejemplos acompañados por glosas escritas en caracteres latinos. El comportamiento del signo "trono con respaldo", entonces, difiere del de los logogramas y los silabogramas, lo que nos permite identificarlo como un signo de notación porque nunca se complementa con o se substituye por signos fonéticos, se limita a contextos específicos y puede convertirse en un logograma dentro de un texto escrito. Desde el punto de vista tipológico, es interesante señalar que en la escritura jeroglífica náhuatl los signos de notación pertenecen no solamente a los numerales, sino también a los signos para nombres de días, meses, objetos de cuenta, títulos y eventos.

Capítulo 5:
Los Lienzos de Tlaxcala y Quauhquechollan: La conquista de Guatemala y la escritura jeroglífica náhuatl durante el siglo XVI

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Entre los años de 1524 y 1527, varias expediciones y conquistas fueron realizadas en el territorio actualmente guatemalteco. Las comitivas conquistadoras fueron enviadas por Hernán Cortés pero lideradas por Pedro de Alvarado y otros integrantes de esta familia. Es común darles la preferencia de la conquista a los españoles, dejando de lado la importante tarea que cumplieron los "indios conquistadores" en esta empresa, quienes a través de los documentos pictográficos demuestran que fueron ellos quienes lideraron y efectuaron todas estas batallas y estrategias de conquista.

A través de dos documentos realizados por los conquistadores, los Lienzos de Tlaxcala y Quauhquechollan haré un recorrido por el trayecto que realizaron los dos grupos nahuas que lideraron estas empresas, adentrándose en el territorio guatemalteco hasta conquistarlo, comparando los lugares conquistados por cada grupo.

En este artículo también revisaré la manera en que cada escuela de escritura decidió plasmar sus conquistas; hablaré de la escritura jeroglífica náhuatl de estos dos documentos para determinar las similitudes y las diferencias en cuanto al repertorio de signos, reglas de composición y los recursos escriturarios utilizados por los escribas. Comparar estos dos documentos me permitirá determinar sus particularidades, por ejemplo, que en el Lienzo de Quauhquechollan se observa un gran uso de infijos y del determinativo semántico CERRO, lo que me lleva a proponer que debemos considerar el signo 'cerro' como un determinativo semántico en los otros documentos mesoamericanos. Así mismo, en ese documento mencionaré el ejemplo de escritura jeroglífica náhuatl para hacer referencia al apodo, en náhuatl, de un personaje español y el posible nombre de uno de los guerreros quauhquecholtecas.

Capítulo 6:
Precursores precolombinos de las ruedas calendáricas coloniales en el centro de México

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Las aproximadamente veinticinco ruedas calendáricas del México colonial son dispositivos gráficos que combinan elementos de la cultura visual mesoamericana y europea. Su forma circular ha sido objeto de debate, ya que algunos investigadores insisten en que el formato se deriva de las ruedas calendáricas europeas, mientras que otros argumentan que las ruedas tienen antecesores mesoamericanos, como la renombrada piedra calendárica azteca. Hasta ahora, esta última hipótesis ha atraída muchas críticas, aunque permanece insuficientemente explorada. Esta contribución tiene como objetivo remediar esta situación, introduciendo y discutiendo posibles superposiciones entre ejemplos precolombinos y coloniales de calendarios circulares. Hay tres ejemplos del Posclásico Tardío de México Central: la página 30 del *Codex Borgia*, el manuscrito conocido como *Aubin ms. 20*, y la piedra del sol mexica. En estos ejemplos, la disposición circular de las secuencias calendáricas aparece en diferentes contextos, pero tienen varios rasgos en común, como la tendencia a encerrar referencias a épocas mítico-históricas o escenas primordiales.

En este sentido, parece haber una considerable continuidad conceptual y visual en el único ejemplo colonial examinado aquí, la rueda calendárica de Boban (*c.* 1540 d.C.). Este documento texcocano presenta una representación circular del año de 365 días con los dieciocho glifos de las veintenas (períodos de 20 días), que, al igual que los ejemplos precolombinos, encierran una relación histórica que se remonta a inicios míticos. Estas observaciones sugieren que los escribas coloniales también recurrían a las convenciones precolombinas cuando se trata de emplear el formato circular.

Se sugiere también, que la representación de la rueda de Boban del ciclo de 365 días—en lugar del ciclo de 260 días—puede haberse inspirado de los calendarios europeos. Sin embargo, el uso de signos logofonéticos precolombinos para las veintenas, la existencia del formato circular antes de la conquista y la existencia de otras ruedas coloniales de 365 días señalan que los escribas indígenas coloniales no vieron mayor impedimento en representar los 365 días día año en un formato circular, como rueda calendárica. Por lo tanto, una pregunta importante es qué tipo de cambio es el que reflejan estas ruedas y si debemos, o no, seguir viéndolas como testimonios de reorganizaciones fundamentales de las concepciones indígenas del tiempo.

Capítulo 7:
Revisitando el año nahua.
Traducción de concepciones temporales

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El contacto con el Nuevo Mundo supuso un enfrentamiento epistemológico que abarcó campos básicos del conocimiento, como la concepción del tiempo. Por lo tanto, la descripción de los calendarios de los nativos americanos se convirtió en un tema principal en las fuentes escritas de la Colonia. Sin embargo, los autores de estos documentos intentaron describir el funcionamiento calendárico empleando narrativas, conceptos e instrumentos extranjeros (cristianos) que no pertenecían a las configuraciones gráficas y discursivas originales utilizadas en las fuentes indígenas. Por tanto, lo que parecía ser una descripción neutra de períodos temporales, fue un ejercicio complejo de traducción epistemológica, reconfiguración conceptual y transposición intermedial. En otras palabras, el paso de la cultura indígena visual / escrita a la cultura literaria colonial implicó una transformación del conocimiento cronológico y cosmológico, que es necesario discutir.

El objetivo de este trabajo es seguir una de las principales transformaciones del discurso cronográfico empleado en el centro de México hacia el siglo XVI: la reinvención de las veintenas como calendario autónomo. Una selección de casos demostrará la forma en que diferentes agentes lograron desmontar la maquinaria cosmológica nahua, para obtener piezas sueltas (fechas) que podrían correlacionarse con los días del calendario cristiano, creando así un año indígena "universal". En este esfuerzo, la producción de nuevas imágenes fue una estrategia central porque condensaron modelos de explicación que se presentarían en descripciones lineales. La muestra analizada abarca fenómenos como la iconización de los sistemas de escritura, la segmentación de la cuenta del tiempo en un calendario fijo y otro móvil y la astronomización del conocimiento temporal.

Author Biographies

Mikkel Bøg Clemmensen is a doctoral fellow at the Institute for Cross-cultural and Regional Studies at the University of Copenhagen. Mikkel has a BA in the Science of Religion and an MA in American Indian Languages and Cultures and his field of study is religion and art in Colonial Mexico. Mikkel has previously published articles on colonial church art. He is currently finishing dissertation on the continuity of the Central Mexican calendar systems during the Colonial era.

Margarita Cossich Vielman obtained her qualifications as certified archaeologist from the Universidad de San Carlos de Guatemala, and her Doctorate in Mesoamerican Studies, from the Universidad Nacional Autónoma de México. Her areas of specialization include: the Nahua peoples of Central America before, during and after the Spanish invasion, as well as hieroglyphic and alphabetic writing in Nahuatl in Prehispanic and early colonial documents. In recent years, she has focused on studying the Tlaxcalan iteration of the conquest, the presence of women in this era, and the dissemination of these findings. Her latest publications include "Die Hieroglyphenschrift der Nahua im Codex Mendoza" and "Erläuternde Kommentare zum Bild-Text" (2021), as well as "Princesas tlaxcaltecas, su palabra y su guerra" (2021). She is part of the interdisciplinary digital reconstruction project of the *Lienzo de Tlaxcala* of the Instituto de Investigaciones Históricas, of the Universidad Nacional Autónoma de México (www.lienzodetlaxcala.unam.mx). She is the coordinator of the "UNAM Conquest" program of the *Noticonquista* project (www.noticonquista.unam.mx) of the same institution. She is co-curator of the art exhibition "Painting the Canvas of Tlaxcala" and Co-creator of the free mobile video game, "Yaopan: un juego de la conquista".

Albert Davletshin was born in Norilsk, the world's northernmost city situated above the Arctic Circle, in 1976. He completed his PhD thesis on the palaeography of Maya hieroglyphic writing at the Knorozov Centre for Mesoamerican Studies, of the Russian State University for the Humanities, Moscow, in 2003. He has been working at the Institute for Oriental and Classical Studies at the same university since then and currently serves as a research fellow at the Institute for Anthropology, at the Universidad Veracruzana, Xalapa (since 2021). Albert works on logosyllabic writing systems, methods of decipherment, iconography and historical linguistics of Mesoamerica and Polynesia. He has published on Epi-Olmec, Harrapan, Kohau Rongorongo, Maya, Nahuatl, Teotihuacan and Zapotec scripts. He is the founder of projects on Proto-Totonacan (University of Mexico) and on the Nahuatl script (Bonn University). Albert has carried out linguistic fieldwork with Pisaflores Tepehua (Mexico), Sym Evenki and Kellog Ket (Siberia), Rapa Nui (Easter Island) and Nukeria (Papua New Guinea).

†Ana Guadalupe Díaz Álvarez was a distinguished researcher at the Instituto de Investigaciones Estéticas at the Universidad Nacional Autónoma de México (UNAM). She obtained her doctorate in Art History from the UNAM (2011) with a thesis on the cosmology and calendrics of Colonial Mexico, for which she received the prize for the best doctoral thesis in the humanities from the Mexican Academy of Sciences as well as the prize for best thesis on history and ethnohistory from the Instituto Nacional de Antropolgía e Historia (INAH). Ana has served as assistant to the director and academic coordinator of Mexico's Museo Nacional de Antropología from 2010 to 2012. In 2019, she obtained the Cátedra Especial Miguel León-Portilla at the UNAM. Ana received broad international recognition, working with specialists in the field of Mesoamerican studies and Central Mexican codices. She authored and edited a number of articles and books, including the anthology *Reshaping the World: Debates on Mesoamerican Cosmologies* (2020) and her recent monograph *El cuerpo del tiempo: Códices, cosmología y tradiciones cronográficas del centro de México* (2020). At the time of her untimely passing, Ana was working on new projects analyzing the codices and indigenous ways of graphic expression.

Davide Domenici is Associate Professor of Anthropology at the Department of History and Cultures of the University of Bologna (Italy) where he teaches Indigenous American Art and Culture, Museum Anthropology, as well as Colonialism, Archaeology and Museums. He is also Director of the graduate program in History and Culture of Food. Davide Domenici has participated in archaeological projects in Nazca (Peru, 1986–1990) and Rapa Nui (Chile, 1991–1992). Between 1993 and 1994 he took part in the *Proyecto Especial Teotihuacan*, being in charge – together with a group of international research fellows – of the excavation of the Group 5', to the west of the Pyramid of the Moon. He has, since then, developed an interest in Teotihuacan iconography and writing. Between 1998 and 2010 Davide Domenici co-directed the *Río La Venta Archaeological Project* (Chiapas, Mexico) and, between 2011 and 2017, of *The Cahokia Project* (Illinois, USA). Over the last fifteen years, he has been studying the technology of codex painting in Prehispanic and Colonial Mesoamerica by means of non-invasive

analytical techniques, in cooperation with the MOLAB Mobile Laboratory. He is currently studying the cultural biographies of Mesoamerican artifacts, especially codices and turquoise mosaics, brought to Italy during the 16th century, and which are still preserved in Italian and European museums.

Christophe Helmke is Associate Professor of American Indian Languages and Cultures at the Institute of Cross-cultural and Regional Studies, University of Copenhagen, Denmark, where he teaches undergraduate and graduate courses on the archaeology, epigraphy, iconography and languages of Mesoamerica. Since 1996, he has participated on and led excavations, archaeological reconnaissance and epigraphic documentation at a variety of sites in Belize, Guatemala and Mexico. Since 2000, he has tutored hieroglyphic workshops at conferences in Europe as well as North and Central America. Since 2019, he serves as co-Principal Investigator of *The Central Mexican Writing Systems and Calendars* project, funded by the Velux Foundations. As of 2020, he is the Chair of Native American studies at the University of Copenhagen. Besides Mesoamerican archaeology and epigraphy, other research interests include the Pre-Columbian use of caves, as well as rock art and comparative Amerindian mythology.

Jesper Nielsen is a Ph.D. and Associate Professor at the University of Copenhagen. He received his MA (1998) and Ph.D. (2003) from the Department of American Indian Languages and Cultures at the University of Copenhagen. His research can be characterized as cross-disciplinary and focuses on Mesoamerican iconography, epigraphy, history and religion. He also has a strong interest in early Colonial studies in central Mexico and the Maya region, as well as research history in the field of Mesoamericanist studies. Jesper has published numerous books, chapters and articles in international peer-reviewed journals and edited volumes. Recent book publications include *The Restless Blood: A Biography on Frans Blom* (2017) with Tore Leifer and Toke Sellner Reunert, "The Early Classic Murals of El Rosario, Queretaro, Mexico: Description and Iconographic Analysis" (2019), with Christophe Helmke, Fiorella Fenoglio and Juan Carlos Saint-Charles Zetina and *El franciscano danés que se convirtió en santo indígena: El legado de Fray Jacobo Daciano* (2021), co-edited with Lorena Ojeda Dávila. In 2014, Jesper received the Einar Hansen Research Foundations Prize for excellence in humanistic research. Since 2020, he has served as Head of Studies at the Institute of Cross-Cultural and Regional Studies.

Ángel Iván Rivera Guzmán is a doctoral candidate at the University of Leiden, in the Netherlands, where he conducts research on Prehispanic writing systems and narratives of western Oaxaca. Iván is an archaeologist with a graduate degree from Mexico's Escuela Nacional de Antropología e Historia. Since 2001 he has been a researcher at the Dirección de Registro Público de Monumentos, Zonas Arqueológicas e Históricos of the Instituto Nacional de Antropología e Historia (INAH). He specializes in the archaeology, iconography, epigraphy, and ethnohistory of the Oaxaca region. He has developed research in the regions of the Mixteca, the central valleys, the Coast and the Sierra Norte. He has especially focused on the study of iconography and the Ñuiñe writing system of the Mixteca, documenting various carved monuments in the region. He has been academic coordinator of the Monte Albán Round Tables of the INAH, as well as editor of the resulting proceedings. He is a member of the editorial board of the series *The Early Americas: History and Culture*, at Brill Publishing, in the Netherlands. He is an advisor to the Unión de Museos Comunitarios de Oaxaca, collaborating in the curation and exhibition of more than a dozen local archeology museums.